

JANUARY, 1945

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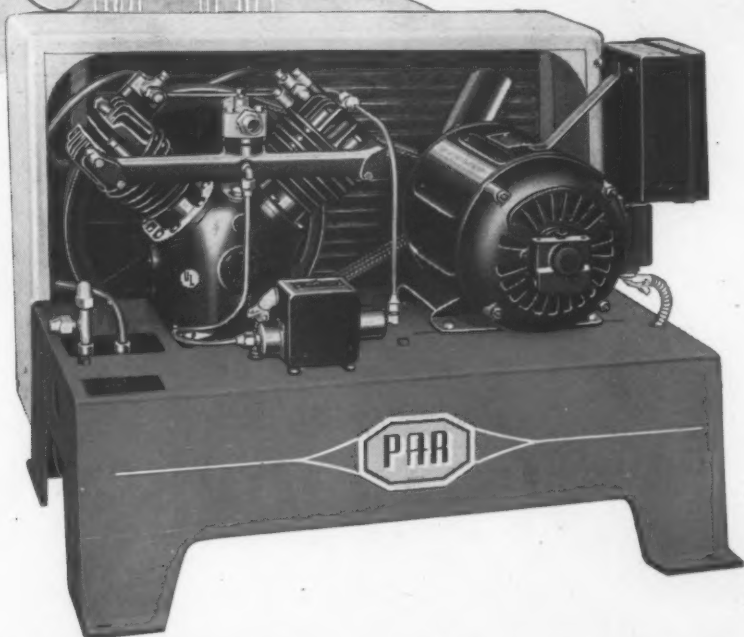
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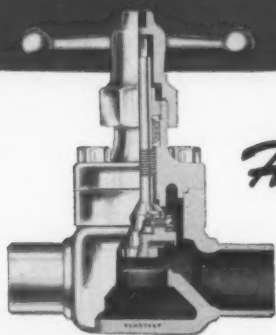


V-DAY MINUS 1 MINUTE

The last bomb released on the Axis will be a boom released on the refrigeration industry. Stifled replacement business will reappear . . . hundreds of new applications, developed by the War, will spring into immediate demand. New markets . . . new customers . . . new products . . . will make barely recognizable the business we have known. We've seen it coming for a long time. We're prepared to meet refrigeration's challenge because we ourselves have played an important role in creating that challenge. We're ready to meet the new demand because we have contributed largely to the development of that demand. And, by the same token, we can help YOU. Write for Bulletin.

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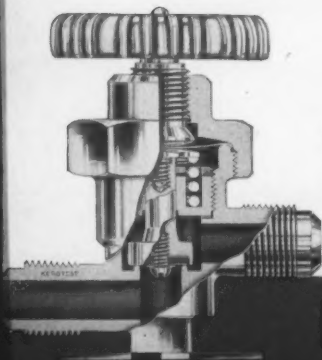
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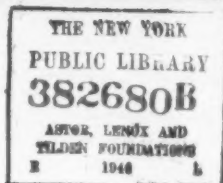
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THE Refrigeration INDUSTRY



VOLUME 2, No. 1

JANUARY, 1945

The Refrigeration Industry

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THE COVER . . . To Norma Long, putting a home freezer miniature in place, it's just a novel doll house. But to dealers of the nation it may well be a carefully built replica, to scale, with every appliance in place, of a postwar store. It was designed by George W. Walker of Detroit, nationally renowned industrial modernist. See portfolio beginning on page 27.

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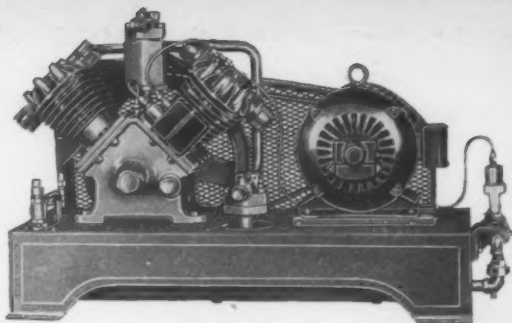
THE PRACTICAL REFRIGERATION ENGINEERING MANUAL

A discussion of the postwar outlook 53

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THE DESIGN OF POST-WAR RETAIL MARKETS ...and refrigeration



What will the post-war retail market be like, is your first question. None of us can decide that definitely at this moment. The trend, because of the existing labor situation, has been toward self-service. Perhaps display cases will be of the beauty, utility and comfort that until now have been dreams. Miracles of laboratory science will be used in their production, including such materials as plastics, new metal alloys, plywood and others, in any desired colors.

To meet the refinements of such innovations, refrigeration will probably be a deciding factor of design. It may be that the refrigeration unit of the post-war era will be contained in *one* sealed unit, without belts, stuffing boxes, shaft seals or moving parts. It may be that each show case and cooler will have its own unit

of the correct size to provide adequate refrigeration. It may mean the end of having one or more compressors in the basement and refrigeration lines running through walls and floors. Stores will be air-conditioned, not only to provide increased comfort for customers, but to prevent spoilage of merchandise.

BRUNNER refrigeration and air-conditioning condensing units will play a vital part in the production of the plastics, glass, and other construction materials used in the design of the post-war retail market as well as in the preservation of our food supplies.

Why not consult our engineers—experts in industrial and commercial refrigeration and air-conditioning—on any temperature or humidity problem? Brunner Manufacturing Company, Utica 1, New York, U. S. A.





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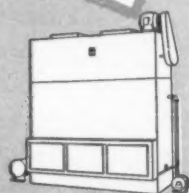
Freezing cannot hurt the revolutionary new Strata-Flo because exclusive d-h design prevents possibility of injury in three important ways—

1. Utmost ease of control minimizes freeze-up probability;
2. Should freeze-ups ever occur, water cannot enter the refrigerant circuit;
3. Sturdy construction makes the entire unit proof against freeze-up damage.

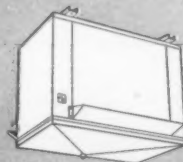
d-h engineers have accomplished this through simplification and refinement of all parts. Controls are the simplest conventional type of automatic expansion valve and externally adjustable thermostatic switch. Cooling element and storage tank are integral, complex assemblies have been eliminated.

In addition, this new type of cooler gives quick recovery, and actually doubles the cold water supply of ordinary coolers at peak periods. Installation and service calls are nil, maintenance costs negligible.

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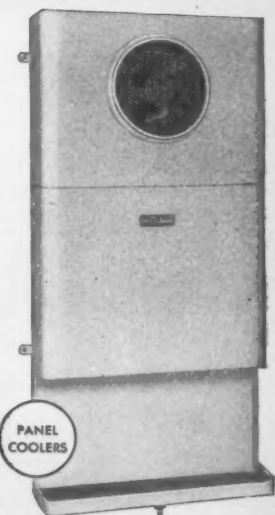
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JANUARY, 1945



This Water Valve Can't Stick!

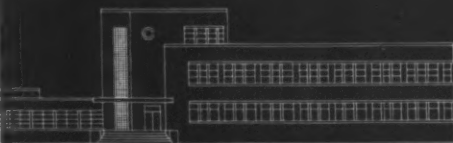
● Look at the picture and you'll see it's true—here's a water valve that *can't stick*! Note how water flowing through the valve body can touch only three parts . . . the valve seat, valve disc holder and extension sleeve . . . all of non-corrosive material.

See how the rubber diaphragms seal off the bellows and range spring . . . protecting sliding parts from the abrasive deposits from water. Nowhere will you find an opening for sedimentation, corrosion or rust!

This is the PENN Series 246 Water Regulator, available in both flanged and threaded styles and in a wide range of sizes. Each has a valve seat that will not stick . . . a range spring that will not rust . . . and complete freedom from water hammer!

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AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

News • Laws • Trends

STILL FROZEN

ANY household mechanical refrigerators produced under the spot authorization procedure recently approved under PR-25 will be added to the frozen stockpile of this equipment, WPB representatives recently told the industry's advisory committee.

Stock of refrigerators in the frozen pool has been reduced to about 48,000, and WPB officials feel it should be increased by any new production that may become available.

It is not expected, however, that there will be much new production available in the next few months. The small motor situation continues to be critical, and the copper supply situation is expected to tighten as a result of requirements of the small arms ammunition program.

This tightening of the copper supply is expected to result in pressure on all copper items, including those used in the manufacture of refrigeration and air conditioning equipment.

WPB's program for increasing production of AC fractional motors calls for a \$5,000,000 increase in capacity. This program will not be completed before the end of the first quarter of 1945, and is not expected to immediately solve the shortage. Right now the backlog of unfilled motor orders is said to be over 4 million units despite present production of about 460,000 units a month.

NEW ASRE OFFICERS

NEW officers of American Society of Refrigerating Engineers were inducted during the society's 40th annual meeting December 10 to 14 in New York City.

J. F. Stone, manager of the refrigeration division of Johns-Manville Corp., is president; vice presidents are C. S. Leopold, Philadelphia consulting engineer; R. H. Money, chief refrigeration engineer, Crosley Corp.; and J. G. Bergdoll, chief engineer, York Corp.

New directors include B. H. Jennings, professor of engineering, Northwestern University; C. S. Neeson, chief engineer, cooling division, Airtemp; J. S. Forbes, president, Superior Valve & Fittings Co.; Warren W. Farr, Refrigeration Maintenance Corp., Cleveland; and C. H. Garrison, of C. H. Garrison Co.

KNOWLEDGE NEEDED

CONSUMER education on the proper use of the home freezer will be just as important in past war sales as will modern production techniques, experts attending General Electric's recent forum at the G-E Consumer Institute in Bridgeport agreed.

The home freezer, said Dr. D. K. Tressler, institute manager, can very easily defeat its own public acceptance because people understand so little about how to use it properly. He emphasized that this education in how to package and freeze foods properly must come before, and not after, the unit is installed in the home.

Consumer education, he declared, must go right along with sales promotion if the dealer wants to avoid dissatisfied customers and kickbacks on sales.

NO PRODUCTION NOW

WPB'S programs covering the production of mechanical soda fountain equipment, frozen food dispensing equipment for retail stores, and non-mechanical water coolers have been withdrawn, as a result of the recently announced change in general military requirements, particularly ammunition.

The program for manufacturing 8,000 refrigerated display cases has not been changed, however. Applications under this program are now being processed and production authorizations will be issued soon. It is expected this program will use about 1600 tons of carbon steel.

AMMONIA OUTLOOK

THE American Chemical Society predicts that post war consumption of ammonia will increase as a result of added demands for refrigeration purposes and other uses. A market survey by the society disclosed that quick freezing of foods is certain to require more ammonia than before the war.

Frozen foods production, the survey showed, climbed from 169 million pounds in 1938 to more than 960 million pounds in 1943.

In addition to its use in cold storage plants and the manufacture of ice, ammonia also provides refrigeration for important industrial processes such as petroleum refining and the nitriding of steel.

L-38 DENIALS

TEMPORARILY, WLB is denying all applications by dealers for refrigeration and air conditioning equipment, including all self-contained package units. These applications are made on WPB Forms 541 and 547. The denials, however, will not affect applications for compressor bodies, low-sides and other repair components.

This action was taken by WPB because of the unprecedented volume of applications for refrigeration and air conditioning equipment being received from dealers and

Continued on page 55

HEAVIER COMMERCIAL INSTALLATIONS OPEN

A NEW FIELD FOR YOU, MR. CONTRACTOR

THE growing popularity of frozen foods among progressive restaurants all over the country is opening a wide new market for the sale of low temperature storage equipment.

Typical of such forward-looking establishments is the Fred Harvey organization, one of the nation's foremost restaurant operators, which has just completed installation of two completely automatic low temperature holding rooms to provide patrons of its restaurants in Cleveland's Union Terminal with an adequate and accessible supply of frozen foods.

Specifications of this particular job called for a design that would provide capacity desired, whether full or partial load, at lowest operating cost, while requiring a minimum of maintenance, and at the same time operate with maximum dependability. Engineering and installation of the equipment was handled by Refrigeration Maintenance Corp., Cleveland.

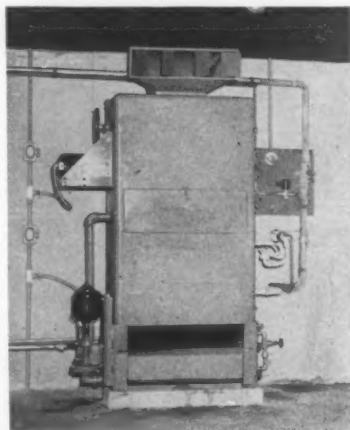
The principal problem was the development of fully automatic low side equipment, that would remain frost-free, to eliminate the necessity of manual defrosting.

Frost-free coil design was most important to save the time required by conventional methods: scraping the frost or employing hot gas defrosting as is usual with gravity circulation coils; operating the electric defrosting or water spray defrosting system usually employed with dry type forced air low side units, as well as to prevent loss of refrigerating effect during such a defrosting period.

Frost free coils are considerably more efficient than frost coated coils,

principally because higher suction pressures can be utilized with resultant increased compressor capacity and also lowered brake horsepower requirements. Further, frost coated coils must be selected with an abnormal safety factor to compensate for the frost formation. With the above under consideration it was decided to use forced air spray type apparatus for the low side equipment.

A second important problem was to design a type of system flexible enough to handle the many types of products now frozen, with temperature requirements in a range of plus



Two spray type coolers, of which this is the larger, serve the low temperature rooms at Fred Harvey's.

10°F. to minus 10°F. and a simple method so that temperatures could easily be varied as product requirements changed.

The refrigerated enclosure consists of two compartments within an area 32 feet long by 14 feet wide, the fin-

ished dimensions of one room being approximately 20 feet 2 inches by 17 feet by 7 feet 2 inches high, and the other 10 feet 2 inches by 17 feet by 7 feet 2 inches high. Two of the existing building walls were utilized to support the insulation adjacent, and two 10-inch plates were bolted to these walls to partially support the roof framing.

Opposite two sides were framed with 2 x 6 inch lumber, and the dividing partition between the two rooms was framed with 2 x 4 inch lumber. Outside partitions, floor and ceiling were insulated with two layers of 4-inch corkboard laid up in an insulating asphalt, having joints of the second layer broken or staggered with respect to those of the first layer.

Dividing partition separating the two rooms was constructed as a free standing cork wall of two layers of 2-inch corkboard. Exposed corkboard surfaces on walls and both sides of the cork partitions were finished with a cement plaster coating 1/2-inch thick, applied in two coats, the second being a finished coat and brought to a float finish and scored off into approximately 4 foot squares.

Exposed ceiling cork was finished with asphalt mastic, troweled on to a thickness of approximately 1/8-inch. Over the floor corkboard was installed a wearing floor of concrete approximately 3 inches thick. The two refrigerator doors are approximately 36 inches wide, 72 inches high, and 8 inches thick, and are of the super-freezer door type, closing flush against the outer surfaces of the door framing.

All exposed wood surfaces were

By Warren W. Farr



Super-freezer type doors, 8 in. thick, close flush against outer surfaces of the door framing.

painted after completion, to prevent deterioration.

Low side equipment, built to Refrigeration Maintenance Corp. load specifications by Niagara Blower Co., and of patented "No-Frost" design, consists of two spray type coolers and one concentrator. The spray type unit for the larger cooler has a fan capacity sufficient to deliver approximately 2000 c.f.m. of air, and is operated by a $\frac{1}{2}$ h.p. motor. A circulating pump is mounted on one side of the unit to circulate the non-corrosive spray liquid from a sump in the base of the spray unit to spray nozzles located directly over the cooling coil.

Cooling coil is equipped with an eight-tube distributing header, feeding each circuit in the coil and insuring even distribution of liquid refrigerant to the coil. A gravity feed is used through the coils to insure proper oil return and a minimum of pressure drop in the system.

Spray unit in the smaller room is of substantially the same design as

the one in the larger cooler, except that the fan capacity is 1500 c.f.m., powered by a $\frac{1}{3}$ h.p. motor.

The sumps of the two spray coolers are interconnected, to insure uniform concentration of spray liquid.

Concentrator unit, located outside the cooler, is supplied with spray liquid from the sump of one cooler, and returns the concentrated liquid to the sump of the other cooler. The concentrator operates in connection with the spray coolers to prevent the formation of ice on the refrigerant coils.

The non-corrosive liquid is sprayed over the coils, and due to the fact that its freezing temperature is about minus 24°F., prevents ice formation at the coils.

During operation of the spray coolers, water condensed from the air dilutes the spray liquid and fills up the sump pans. The concentrator removes this excess water, and re-concentrates the spray solution as follows:

When the level of the solution in the cooler pan is raised above its normal height, a float level switch mechanism opens a solenoid valve in the supply line to the concentrator, allowing the weak solution to flow to the boiling kettle of the concentrator. The temperature in this boiling kettle is maintained by an aquastat in connection with a float level switch, which prevents heating in the kettle until a sufficient quantity of liquid is present.

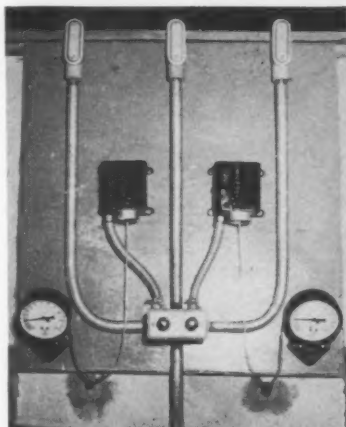
The excess water present in this liquid is evaporated, and passes off

through the concentrator to the sewer. The remaining liquid at a higher concentration than the feed liquid, overflow from the concentrator, and is returned to the sump of the spray cooler. Gradually the level of the liquid in the cooler pan is reduced to the low level, and the float switch stops the flow to the concentrator.

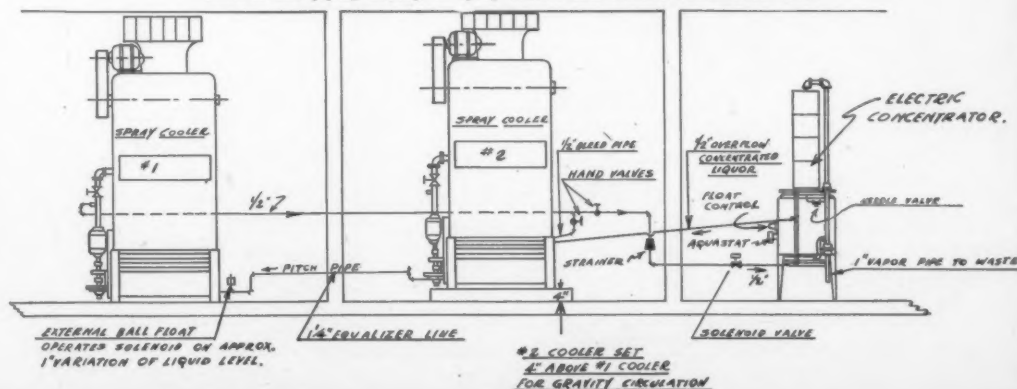
The concentrator will continue to evaporate water until the level of the solution in this unit is lowered and its float switch shuts off the heating element. The concentrator will then stand idle until the level builds up in the sump pan again, at which time the cycle is repeated.

The aquastat, located in the boiling kettle of the concentrator, is wired in series with the float switch, so that the concentration of the liquid in the kettle can be controlled. Each differ-

Control panel includes separate dial thermometers to indicate temperature of each cooler.



Schematic drawing of low side equipment in the Harvey installation, showing location and piping hookup of spray coolers and electric concentrator unit.



ent concentration of spray liquid has its own boiling point. The capacity of this system to evaporate water is $1\frac{1}{4}$ gallons per hour.

Amount of feed and setting of the aquastat at the concentrator is adjusted to provide the maximum amount of evaporation.

Condensing unit used in this installation was built to Refrigeration Maintenance Corp. specifications by



Concentrator unit, shown here, operates to prevent formation of ice on the refrigerant coils.

Airtemp Division of Chrysler Corp., and is of $7\frac{1}{2}$ h.p. radial design with variable capacity, accomplished with an automatic cylinder unloader device. Use of this type compressor permits a constant refrigerant temperature to be held under wide load variations. The direct-driven unit, because of its light weight and comparative freedom from vibration, required no special foundation.

Also included as an integral part of the condensing unit is an oil operator, to reduce the possibility of circulating an excess quantity of oil in combination with the refrigerant.

All cylinders are unloaded when the condensing unit starts, to allow the compressor motor to pick up speed with no load, permitting the use of standard general purpose motor, and across the line starter. The capacity reducing device also prevents short cycling of the unit when loads are below normal, as capacity is automatically adapted to load requirements.

A gauge panel is also provided in

connection with the condensing unit, so that suction pressure, discharge pressure, and oil pressure can be checked with a minimum of effort, and compared to cooler temperatures.

Accessory equipment used in the installation consists of liquid and suction line screens of the "Y" type, to facilitate cleaning. Temperature is maintained in each cooler independent of the other by use of thermostatic control and a solenoid valve.

Thermostats are provided with a third contact, which closes when cooler temperature is 5° above the control setting. This warning circuit is hooked up independently for each cooler to a red warning light on the control panel mounted on the front of the cooler, and also at a second location over 1000 feet away, in the maintenance department.

This feature provides a safety factor by indicating motor failure before any harm is done to stored products.

On this same control panel are mounted separate dial thermometers for each cooler, indicating their respective temperatures. Each cooler is provided with an alarm bell that rings in the watchman's office and the maintenance department in case any person should, by accident, be locked in the cooler.

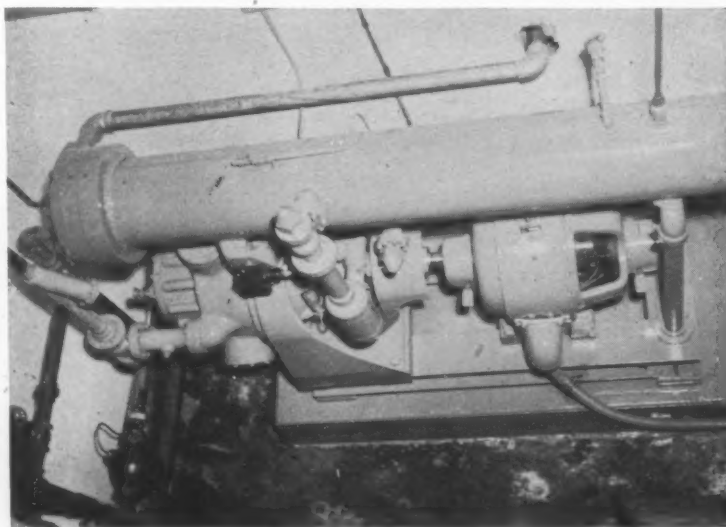
A tool board, mounted near the condensing unit, contains all tools of a special nature necessary for main-

tenance of the equipment. A spare parts cabinet, also located in this area, contains a compressor seal, solenoid valve coils, a complete set of compressor gaskets, spare expansion valve, sufficient chemical to recharge the $\frac{5}{8}$ -inch drier installed in the liquid line, spare fan belts for the brine spray units, and other small parts which are subject to wear. Stocking of this equipment obviates, for the most part, the necessity of providing stand-by equipment.

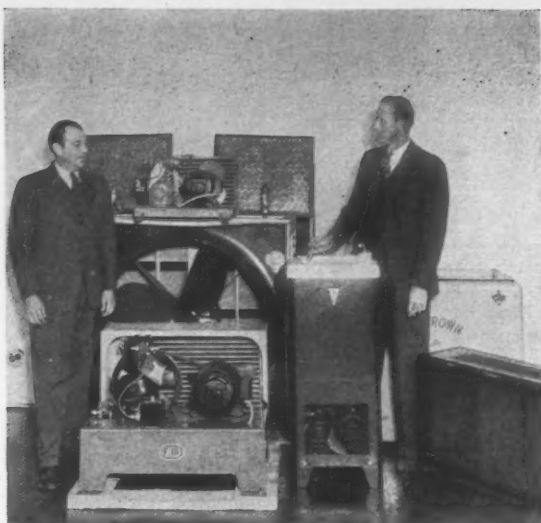
To make possible routine maintenance of this equipment by the user, a complete manual of operating instructions has been furnished by the contractor. These instructions detail the manufacturer's warranty and the contractor's liability during the guarantee period. They include instructions on oiling motors, adjusting belts, and advise the user that the equipment should be checked periodically for mechanical noises and oil levels, and that, if the sound level is above normal, the contractor's service department should be notified. Caution is advised against removing any plugs or fittings in connection with the refrigeration system.

Instructions include a listing of the make, model, serial and part number of all equipment and accessories used in the installation to simplify the ordering of replacement parts. Photostatic copies of wiring diagrams and

Continued on page 54



Condensing unit is of $7\frac{1}{2}$ h.p. radial design with variable capacity through an automatic cylinder unloader device.



Charles (left) and Spencer Stephens in a corner of their sales room, with some samples of the equipment they now merchandise. It all ties-in with their postwar program in the air conditioning and commercial field.

THEY DIDN'T WAIT

The Stephens brothers have already set their own postwar sales goals, and are getting ready for the market they know is awaiting them

ALL this waiting around for postwar business may be all right for some refrigeration men, but not for the Stephens Brothers—Charles and Spencer—who operate a thriving little commercial refrigeration and air conditioning service and sales business down in Memphis, Tenn.

The Stephens Brothers have already set up their own postwar merchandising plan, and they're not waiting for "V-E" or "V-J" Day to put it into effect. Right now, they're going after postwar business in air conditioning, under a priority system they've instituted—and it's something many another dealership might profitably copy.

Postwar Delivery

Contracts for postwar sales will be accepted with a down payment of 10 per cent, which will insure delivery of the equipment in the order in which accepted, as soon as present restrictions on sale and delivery are lifted—and as quickly as merchandise is available. To insure prompt delivery, the company in its turn, plans to turn over these down payments to the factory, placing itself on the preferred list for this equipment. Manufacturers, according to a recent WPB ruling, may now accept orders for postwar delivery without preference ratings, provided it's understood they won't be filled until existing restrictions have been removed.

In the meantime, the brothers are active both in merchandising and servicing. They're selling water coolers to essential users, and commercial equipment, for instance, to dairies

where electrical service has only recently become available. And they're actively in the market for used air conditioning equipment, which can be repaired in their own well-equipped shop and resold for essential cooling purposes. Most equipment of this sort, they've found, can be put back in A-1 condition at a reasonable cost and the application of ingenuity—and it finds a ready market.

The business was organized in

1941, when Charles Stephens and his brother left Slater Engineering Co. and decided to strike out on their own. Despite the materials restrictions imposed by the war, the servicing end of the business has shown a steady growth, and Charles Stephens estimates that the company now does a fair-sized share of the air conditioning maintenance work in the Memphis territory.

Continued on page 49

Here are the brothers at work on a couple of air conditioning condensing units. The combination of selling and servicing, they believe, will put them in a preferred position after the war.



GREMLINS IN THE COOLER; or The Case of the Basement Buzz-Bomb

By R. W. Brackeen

DO REFRIGERATION men have an affinity for gremlins—or is it just the particular jobs we work with that draws them? Anyhow, the experiences set forth here lead me to believe in the presence of teeming multitudes of the grinning little-men-who-aren't-there. This is for you gentlemen, who, with me, associate with basement rats, bump your brains out on hanging soil pipes, and become raving maniacs after a few call-backs on a system infested with gremlins.

There comes to my memory an instantaneous cooler, that still induces nightmares in my sleep. We had installed a second-hand soda fountain to which this flooded type cooler was attached. This was a drug store line-up, the basement of which, having an outdoor street entrance, was let out for a pool hall, but was not open for business at this particular time of day. The water-cooled condensing unit (Freon) was installed in a cubbyhole in the wall at the front of this establishment, directly under the fountain.

We had completed the installation, purged our lines, and started the compressor. Everything had gone nicely—no leaks, compressor running quietly and taking the load easily, high and low temperature compartments functioning normally—and then the water froze up.

Here we go. Adjust constant pressure valve—no dice. Check for shortage of gas—plenty to spare. We

change the regulating valve and start pumping on the cooler again. What happens? Water freezes again. Now frost on suction line from regulating valve indicates float may be leaking. Fine. Determine cooler model and dispatch man after float.

The gremlins have had out their small spearheads, but they have now consolidated their positions and are ready to counterattack in force. I dash to the basement, close the liquid valve, then return to the cooler and apply heat to drive out the



Freon. The pump-down is coming along nicely.

Suddenly the room seems to raise up about a foot, and an ominous rumble bursts forth from downstairs.

What is the maximum sentence for mayhem? This is my only thought as I dazedly hurry down to the pool hall. I look through the door, then turn and start back up the stairs, heading for my draft board with immediate induction as my single purpose. I am stopped by the owner of the recreation room, retreat and stumble in ahead of him, and begin to analyze the damage.

The oil separator has ripped off of the machine buzz-bomb style, ricocheted off of the surge tank, leaving it a lop-sided mass of steel. It has angled out across the room, catching a snooker table right along the top, ripping off the felt and leaving a nice indentation in the slate, striking the far rail and bouncing into a new fluorescent fixture, depreciating it off the books at one stroke and then falling harmlessly on the floor.

I picked up the oil separator. The gremlins had done their work well.

The welded seam around the bottom of the oil separator had not fused properly at one point, leaving about an inch of seam just holding by a thread of a weld. The little men had pried this to a point where the cylinder could no longer stay in one piece.

This was used equipment, and fortunately the druggist had purchased it without any advice from our department. The defective oil separator was acquittal enough for us, and there was no reason to believe that the receiver would not hold the charge of the system nor that the high pressure cutout would fail to protect it.

However, it takes more than these few words to explain this to those not versed in mechanics, and who, by this time, were dubious as to our ability along refrigeration lines anyway. Consequently some little time was consumed in the process, and it was very late in the day before we were coordinated into a functioning organization again. It was decided to make a fresh start in the morning.

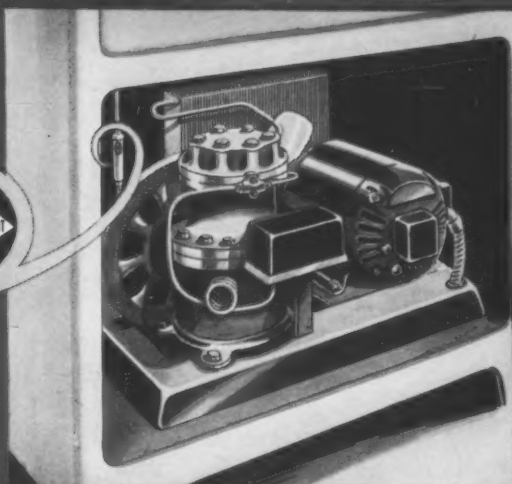
In the morning, oil separator and surge tank were replaced, along with



smashed fittings and tubing. The system was recharged and started in operation, without replacing the float in the water cooler. Encore. Water freezes tight. Decide to change float. Pump down and personally watch pressure gauge during process. Remove float from cooler. Note that the pivot pin on needle assembly is badly worn, and that the little ring rest inside the tank is slightly worn. The new float will make it as good as

Continued on page 53

DAVISON'S SILICA GEL PROVIDES



Extra Protection



Davison's Silica Gel has become the industry's preferred drying agent because it **DOES MORE** for you than ordinary drying agents . . . gives you protection beyond removal of moisture.

FIRST—it is processed especially for the dehydration of refrigerants.

SECOND—its scientifically-determined particle size assures you that the refrigerant will not channel—will be distributed evenly throughout the cartridge.

THIRD—this even distribution of the refrigerant makes it possible for it to be in complete contact with the entire pore surface area (7,500,000 square inches per

cubic inch of Silica Gel) at all times.

FOURTH—it removes acids and corrosive compounds . . . in addition to moisture . . . instantly.

FIFTH—its capacity for moisture is not affected by oil.

SIXTH—it will not cake nor powder.

SEVENTH—it will not attack metals or alloys.

All you have to do to get this **COMPLETE DRYING AGENT** that is effective on Freon, Methyl Chloride, Sulfur Dioxide, etc., is to specify Davison's Silica Gel from your jobber . . . in factory-charged dehydrators or in bulk for refill.



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JANUARY, 1945

15

A COMPRESSOR

IS NO BETTER THAN ITS SHAFT SEAL...

WE SPECIALIZE in the making of mechanical seal assemblies for rotating shafts. Our product is the result of years of experiment and study. ROTARY SEALS, in addition to being the outstanding choice of service organizations, are also used as original equipment by compressor manufacturers.

In addition to handling Rotary Seal Replacement Units for household compressors

**WE ALSO STOCK MANY UNITS
For Commercial Compressors**

prominent among these being:

Make of Compressor	Shaft Size	Stock No.	Make of Compressor	Shaft Size	Stock No.
BAKER	1 1/8"	9408	GENERAL ELECTRIC	2"	30199
BAKER	1-7/16"	17409	KELVINATOR	1-3/16"	14117
BAKER	2 1/4"	22411	KELVINATOR	1 3/8"	14119
BRUNNER	1 1/8"	9379	KELVINATOR	1 1/2"	14122
BRUNNER	1 1/8"	9376	KELVINATOR	1-9/16"	17123
BRUNNER	1 1/4"	9377	WESTINGHOUSE	1"	6365
BRUNNER	2"	22378	WESTINGHOUSE	1 1/4"	9366
CARRIER	1"	9158	WESTINGHOUSE	1 1/4"	17367
CARRIER	1 1/2"	14159	WESTINGHOUSE	2"	17364
CARRIER	2 3/8"	22160	YORK	3/4"	6223
CURTIS	1-1/16"	9291	YORK	3/4"	14222
CURTIS	1 1/2"	9284	YORK	1 1/8"	14224
GENERAL ELECTRIC	2"	17198	YORK	1 3/4"	30221

Additional units for commercial compressors are listed in our 1944 Replacement Unit Stock List which we will furnish upon request.

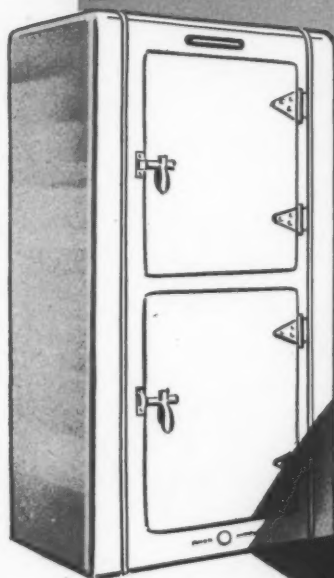


ROTARY SEAL COMPANY

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G-K-U-Z-O-L-C

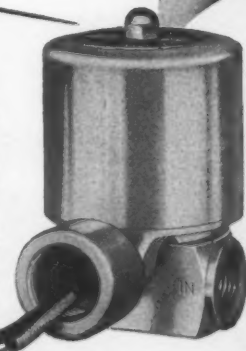
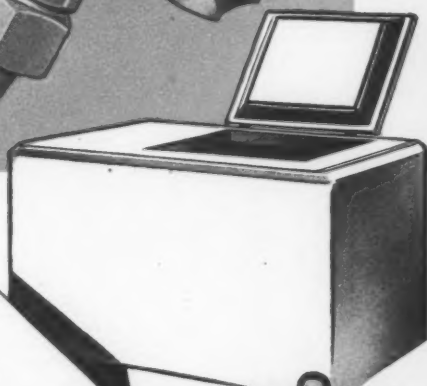
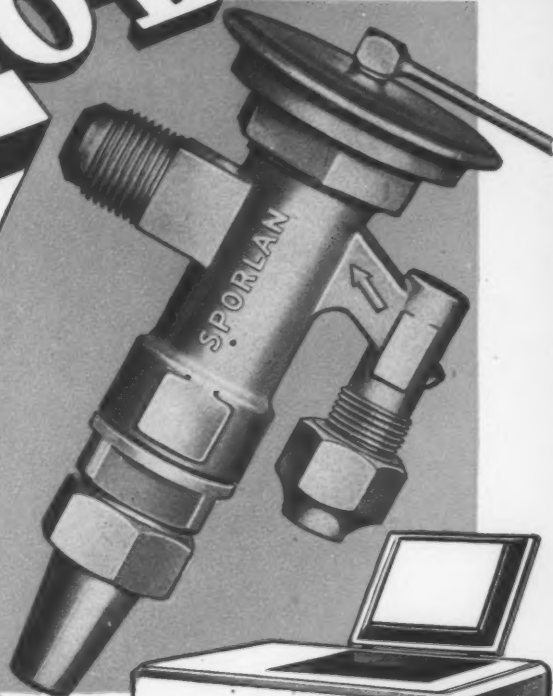


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FREEZERS

HOME
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LOCKER
PLANTS



Sporlan Gives You Selective Z Charge for Low Temperature Applications!

Everyone knows that no one charge can give peak performance on all applications. For example, no *standard* charge will do for ice cream cabinets... farm freezers... home freezers and locker plants. All of these are low temperature applications and in order to give the best possible performance they demand a thermostatic expansion valve that is charged specifically for low temperature work.

That's why Sporlan developed Selective



Charges G-K-U-Z-O-L-C with each charge designed to fit a specific condition. And that's why you should always ask your jobber for a Sporlan Valve with a *low temperature "Z"* charge for Peak Performance on all low temperature applications.

Sporlan manufactures Solenoid Valves... Solenoid Pilot Controls... Modulating Pilot Controls... Refrigerant Distributors and the only Thermostatic Expansion Valves with Selective Charges.

SPORLAN VALVE COMPANY




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Here is the  low-down on how to rate high with any refrigeration customer 

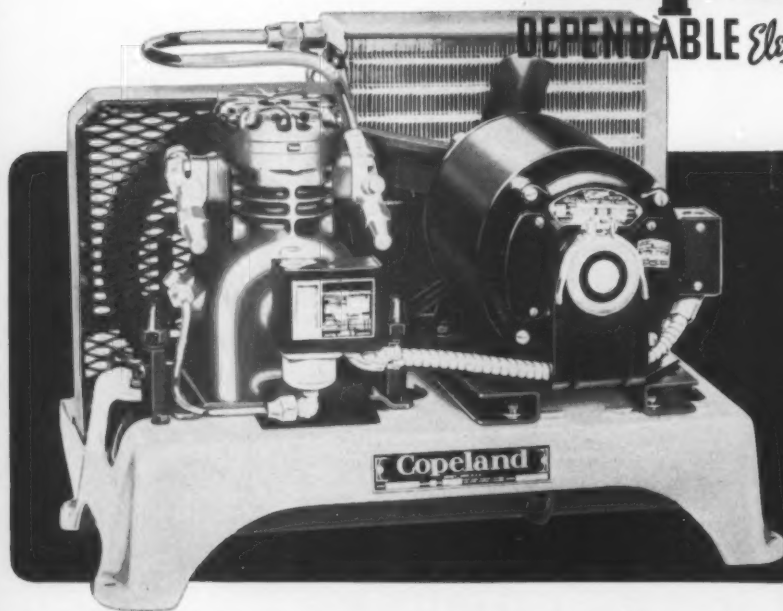
... Sell him a **Copeland** of just the right size  and type for his purpose. He

saves money  by your recommendations and you're backed  by us, not just till after the sale but ... from then on-n-n 

You and  Copeland are the team that keeps that customer thanking  his lucky stars he met  you and ...

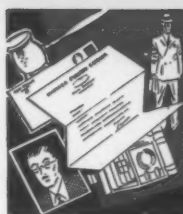
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DEPENDABLE *Electric* REFRIGERATION



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COPELAND REFRIGERATION CORPORATION, SIDNEY, OHIO



About People

JOHN WYLLIE, JR.

John Wyllie, Jr., vice president and general manager of Temprite Products Corp., died suddenly November 26 at his home in Detroit. He was 42 years old. A widely known veteran of the refrigeration industry, Mr. Wyllie began his career with Nizer Corp. following his graduation from the University of Michigan in 1924. While with the Nizer organization, he organized and conducted the first refrigeration service correspondence school in the world. At one time more than 6,000 students were enrolled in this school.



In 1926 Nizer was merged with Kelvinator, and Mr. Wyllie transferred along with the original organization, remaining with Kelvinator eight years. During this time he was special representative to C. K. Woodbridge, president of Kelvinator, and later assumed charge of commercial sales in the New York City area. In 1933 he returned to Detroit where he organized both the commercial engineering department and the sales engineering department for the national organization.

In 1934 he left Kelvinator to become general sales manager of Temprite and the following year was named vice president and general manager.

Mr. Wyllie was one of the founders and a former president of Refrigeration Equipment Manufacturers Association, and an active member of American Society of Refrigerating Engineers. He also was chairman of the National Refrigeration Manpower and Training Program.

JOSEPH E. WILHELM

Election of Joseph E. Wilhelm, chief engineer of the Avery Engineering Co., Cleveland, as vice-president of that corporation has been an-

nounced by Lester T. Avery, president.

He is a member of the American Society of Refrigerating Engineers and of American Society of Heating and Ventilating Engineers, and was chairman of the Cleveland A. S. R. E. section during 1943. A registered Ohio professional engineer, he was graduated from Case School of Applied Science.

D. E. STENSON



Appointment of D. E. Stenson as eastern district sales manager has been announced by R. L. Sears, sales manager, Par division, of Lynch Mfg. Corp., Defiance, Ohio. Mr. Stenson has many years' experience in the jobbing field in New York, Chicago, and Boston as a background for his new position.

He will headquarter in Boston, and will be in charge of all sales in the New England territory for Par condensing units.

JOHN A. SARGENT



John A. Sargent, formerly assistant manager of the Menominee and Marinette Light & Traction Co., a subsidiary of Wisconsin Public Service Corp., has been appointed planning engineer for Ansul Chemical Co. and its Dugas division.

Ansul is looking forward to expanded markets for its products after the war. Mr. Sargent has been given the job of coordinating the thoughts, ideas and activities of the various departments.

HAROLD McCLOUD NAMED JOBBER SECRETARY

Harold S. McCloud was appointed executive secretary of the National Refrigeration Supply Jobbers Association by the board of directors of the organization, effective January 1, 1945.

Mr. McCloud, past president and director of N.R.S.J.A., has been in the refrigeration business for the past



22 years, beginning in 1922 in the Cincinnati branch of Frigidaire.

Since 1934, he has been associated with Williams & Co., refrigeration jobbing firm, with headquarters in Pittsburgh. He is credited with helping to establish this company's refrigeration department.

Mr. McCloud was elected president of the jobber association at the time of its organization in 1935, and later served two three-year terms as a national director.

A member of A.S.R.E. and R.S.E.S., Mr. McCloud has been N.R.S.J.A. representative on the standing committee on commercial refrigeration condensing units for the national Bureau of Standards.

Now located in Pittsburgh, he plans to return to Cincinnati and establish jobber headquarters there.

L. W. MOORE

Lucien W. Moore, previously general purchasing agent of Crane Co., has been appointed manager of the valve and fitting sales department in Chicago.

HARRY PARRISH

Harry Parrish has been appointed sales manager of Universal Cooler Co. of Canada, Brantford, Ont. He formerly was editor of *Canadian Refrigeration Journal*; Gordon A. Burns is now editor of the Canadian publication.

7 REASONS WHY

"DL" SOLENOID VALVES ARE PREFERRED

- 1 **POWERFUL**—Ample power to lift against high pressures.
- 2 **QUIET**—Design of plunger and guide tube minimizes objectionable A.C. hum.
- 3 **EASILY INSTALLED**—Substantial mounting boss on valve body makes for easy, rigid installation.
- 4 **EASILY SERVICED**—Can be disassembled and cleaned without disconnecting refrigerant lines or wiring.
- 5 **POSITIVE CLOSING**—Non magnetic needle and seat and strong "kick off" spring assure tight closing.
- 6 **LONG LIVED**—Valve bodies are of close-grained non-porous cast brass. Coils are of moisture-proof construction.
- 7 **ECONOMICAL**—Draw little current. Replacement parts if required are inexpensive.

Specify "DL" solenoid valves and take advantage of these features.

FOUR WIRE COIL

One of the features of "DL" solenoids preferred by jobbers and service men is the dual 115-230 volt 4 lead coil. This coil can be used on either 115V60 cycle or 230 volt 60 cycle current by connecting the 4 leads in the right sequence. Correct wiring diagram is shown right on the coil—a great time saver.



No. 683-3—This reliable valve, like all "DL" solenoids is designed for use with any fluid that will not attack brass. Furnished with three sizes of orifices, 1/8", 3/16", and 7/32".

Nominal capacity—liquid line

3/16" orifice	3 tons Freon	6-1/2 tons Methyl
7/32" orifice	3-3/4 tons Freon	8-3/4 tons Methyl
3/8" female N.P.T. connections.		

No. 681—The No. 681 is of the pilot operated type and requires a minimum pressure drop of 1 p.s.i. to operate the piston.

Nominal capacity—liquid line

7-1/2 tons Freon	17 tons Methyl
1/2" female N.P.T. connections.	



No. 686—The No. 686 is a heavy duty, large capacity pilot operated valve which requires a pressure drop of 1-3/4 p.s.i. to operate the piston when used with refrigerants, 5 p.s.i. on water. It is made with 2 sizes of orifices, 1/2" and 5/8"

Nominal capacity—liquid line

1/2" orifice	11 tons Freon	23 tons Methyl
5/8" orifice	17 tons Freon	34 tons Methyl

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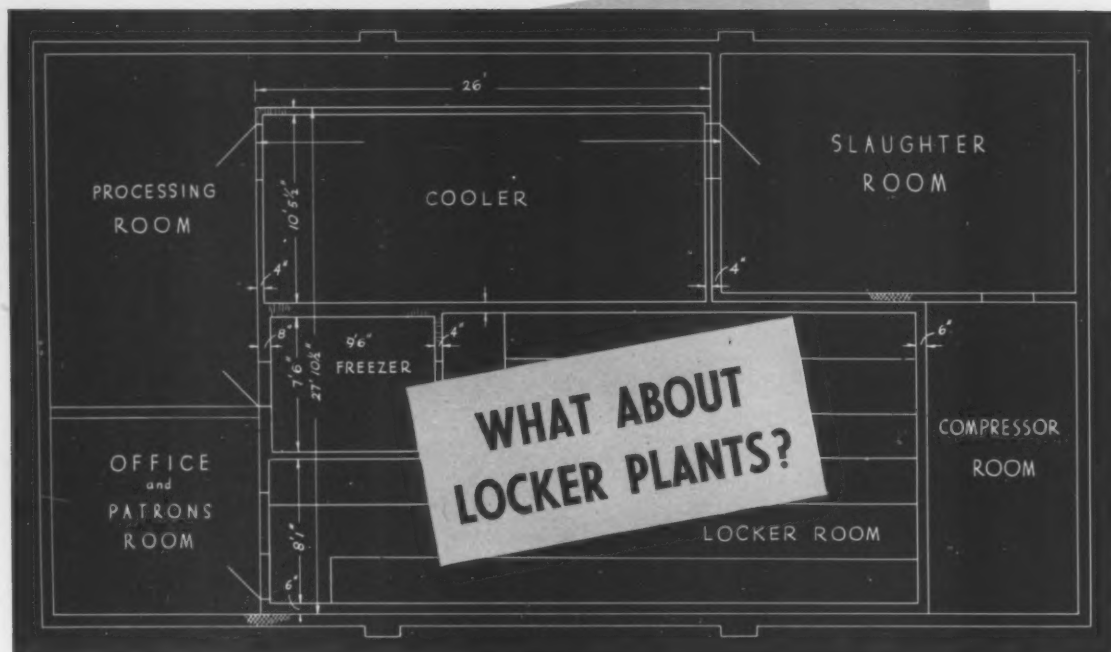
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BEAT IT!

***If you've never handled the Mills Compressor—get one.
See if you ever had, or could have anything better. In
performance it will take a beating!***

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Like Topsy, refrigerated food locker plants "just grewed," but with 5,800 in operation, they're big business now

By Hiram K. Smith

Associate Editor

THE REFRIGERATION INDUSTRY



WHEN someone asks you how many locker plants are in operation you can answer "fifty-eight hundred" without batting an eye. For it's safe to say this figure is as close as any; no one seems to know precisely how many there are.

Exactly where or when the refrigerated food locker plant originated is another detail still somewhat vague in the history of this astonishing development in food preservation.

But just as we can accept the figure 5,800 for the number of plants now operating, so we can accept as reasonably accurate these facts about early locker plants: The magazine writer Boyden Sparkes, who recently discovered the frozen food business, mentions that the first locker plant began to evolve about 1903 at Chico, Calif., when the Chico Ice and Cold Storage Co. began renting space to traders and merchants for cold storage of some food products.

Several years later enlarged space was rented farmers, each of whom was obliged to provide his own box which, to prevent pilferage, was equipped with a lock.

All-Steel Equip. Co.

Interior of conventional type locker plant, equipped with plate type coils. Zero temperatures are held in the locker rooms of most of today's plants.



York Corp.
Many first-class plants offer complete marketing service, use additional display units.

sausage-making and lard-rendering, curing hams and bacon, facilities for preparing fruits and vegetables and, finally, for quick-freezing and storing these foods.

In locating and planning a new locker plant, several important details should be observed, as pointed out by the Frozen Food Locker Manufacturer and Suppliers Association.

First of all, the plant must be conveniently located for the public near

locker plant construction as in all low-temperature work. Whatever the type used, it must be thick enough to hold easily a temperature of 36°F. in the chill room, —10°F. (preferably lower) in the quick freezer, and a steady 0°F. in the locker room.

The size of the plant depends upon the needs of the community. Existing

LOOK AT THE FROZEN FOOD BUSINESS! PART 2

By 1917 lockers for farmers had been installed in a special room.

This pattern was repeated with parallel developments in other small towns; as early as 1910 farmers near Crete, Nebr., were calling their cold storage facility a "locker plant."

When war-time food shortages eased, however, the idea seems to have fallen into disuse; by the time it appeared again—about 1928, probably at Centralia, Wash.—advances in refrigeration, in quick-freezing and packaging foods, had made the modern locker plant possible. And vastly different it is from the cold storage rooms of the past.

Today's first-class plant provides ample space for chilling and aging meats, for butchering and packaging,

normal trading areas, should have ample parking space, and the lockers themselves should be readily accessible for patrons.

Chill and aging rooms must be planned with capacity to handle peak loads. Present government regulations require .6 sq. ft. of chill room space for each locker of capacity. The quick-freezing cabinet or room should have a capacity both in size and coil equipment adequate to freeze at least two pounds of food per locker per day.

Choice of refrigeration equipment depends upon the refrigeration contractor handling the job and on the prospective operator's preference. Freon, methyl chloride and ammonia are all widely used as refrigerants; pipe, plate, and forced-air coils all have their advocates.

Insulation is crucial in proper

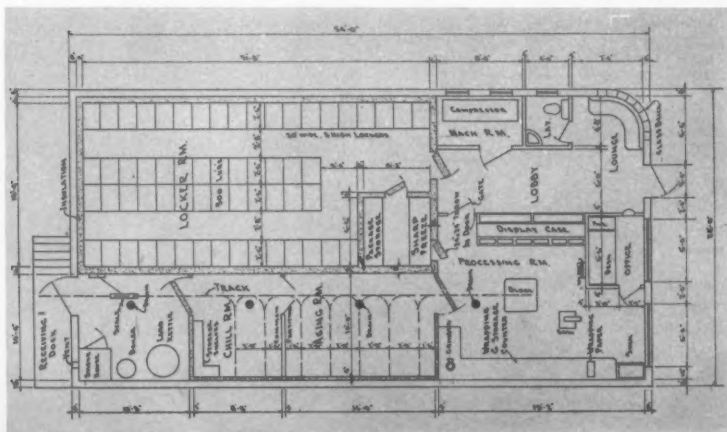
plants range from 50 to 1500 or more lockers, but the national average is more than 300 and rising steadily to about 400. Generally plants operated as a separate enterprise have 500 lockers or more capacity.

Heretofore, the larger plants usually have been organized on a co-operative basis. It is of particular interest to refrigeration men, therefore, that locker plants now tend to be somewhat smaller establishments that can be easily and quickly fi-



Armstrong Cork Co.

One modern trend has been to below-the-floor type plants housed in normal rooms.



nanced and opened by enterprising individuals.

The operator rents his lockers for \$8.00 to \$25.00 a year; processing and service charges run from 1c to 3½c or more a pound. He's in a good business; if it's properly managed he can expect a return on his investment of as high as 25 per cent. Moreover, if he runs his locker operation in conjunction with a previously-established enterprise such as a grocery or meat market, he'll find stimu-

All-Steel Equip Co.

Here's a model layout for a 300 locker plant, with complete processing services.

lation of store traffic has increased his original business another 25 per cent. Indeed, some retail stores have increased sales by as much as 30 to 45 per cent by putting in a locker storage department.

Figures show that most locker users are concentrated in rural areas. Depending upon the size of his family, the average patron probably puts through his locker from 400 to 800 pounds of processed meat and poultry alone each year.



Armstrong Cork Co.

In this type of "automatic" system locker selection is made on dial and conveyor brings locker around to door.

Not all locker users are rural citizens, however. In Waynesboro, Pa., a city of 10,000 population, about 50 per cent of available locker space is rented by city dwellers. Urbanites rent 85 per cent of locker space in White Plains, N. Y. (pop. 40,000), 80 per cent of space in Bronxville, N. Y.

Practically all existing plants have a waiting list for lockers and it is rare indeed for a patron to give up his locker because he is dissatisfied with the service.

This backlog of would-be renters and the continuing high rate of new construction points to a continuing demand for new locker plants. How fast locker plant patronage grows can be judged by a look at a few typical states. Minnesota's first plant was opened at Waseca in 1935; four years later the state reported 213 in service. Iowa had six plants in 1935; today she leads the nation with 580 (a recent road map lists only 540 towns and villages in the state).

In recent years impressive growth has been recorded in the south. Texas for example, had one plant in 1939; last September, 207 were in operation. The first five states, however, are those in which the locker industry first developed. In order, they are Iowa, Wisconsin (480), Minnesota (454), Washington (394), and Illinois (353).

During the years immediately preceding the war, new-plant construction moved forward at the rate of 50 a month, at one time reached a high of 63. War-time restrictions have reduced this rate, but even so, since both WPB and WFA early recognized locker plants as essential to the food program, materials and equipment for about 600 plants per year have been allowed.

Today application must be made to your district WPB office for authorization of a locker plant construction or expansion project. Minimum standards have been set up for cer-



Salem Engineering Co.

Photo above shows customer serving self from locker brought on conveyor to door in a similar "automatic" system.

tain physical details, for processing and storage rates, and for location of the plant. Projects requiring a new building will not be recommended in towns with a population in excess of 15,000 or within 10 miles of an existing plant, and in all other locations there must be adequate justification for a new building.

Under certain conditions, expansion of existing plant or use of a building remodeled for locker use may be permitted by WPB. Compressors and coils for a job in a town

under 15,000 may be new, but in a city of more than 50,000, only used compressors and coils may be used.

In addition, for a new plant of minimum size (3,250 cu. ft. storage space exclusive of the quick-freezer, or room for about 250 lockers), not less than 150 families who are producers of food* must have paid in advance their first year's locker rental. The percentage of locker capacity which must be rented in advance climbs upward with the size of the city to a high of 75 per cent for cities over 50,000. These advance locker rentals are placed in escrow pending approval of the project.

Before the war some firms engaged in the specialized business of building locker plants and selling them upon completion to interested individuals or firms. The success of this type of operation has led in recent years to organization of a number of "national" concerns which will undertake to handle all details of a locker project, including financing, application for WFA and WPB approval, designing, engineering, and contracting.

Despite this competition, however, the trend in locker design and operation still would seem to favor the small refrigeration contractor. Here's why: Study of case histories indicates that the more successful locker plants are of two distinct types—either huge, offering complete slaughtering and processing services and handling several lines of commercially frozen foods; or of medium size and operated in conjunction with an existing business.

Of these, the last is of important concern to the smaller refrigeration contractor, for the most logical operator of a locker plant in conjunction with an existing business is the grocer and butcher, the small merchant, the creamery man, the ice cream man—and these gentlemen already are the refrigeration man's customers! Besides *this* inside track,

Continued on page 32

*WFA defines "producers of food" as follows: persons who are resident operators of farms; persons who reside in town but who supervise the operation of a farm by a tenant on a share basis, or by hired labor; those not thus classified but who grow food of the type normally stored in lockers in sufficient quantity to justify the use of a locker. In general, this shall mean at least 200 pounds of meat or poultry or 150 pounds of fruits and/or vegetables which would be stored in a locker.



Attract and hold customers by using G-E FACTORY SERVICE PLANS For G-E fractional-hp motors

ONE sure-fire way to attract and hold trade, to maintain a steady volume today, and to build for the postwar period, is through the dealer-proved G-E Factory Service Plans. If you're prepared to repair or replace inoperative motors *quickly, economically, and expertly*, you can attract more service business to your store; you can get your share of this increasing wartime business.

These Factory Service Plans enable you to make repairs and replacements on practically any G-E fractional-horsepower motor, regardless of the type or make of appliance on which it is used. The work is done *quickly and reasonably*—with convenience and satisfaction for your customers, and at a profit that you know beforehand. But more important, there's no need for you to train repairmen—G.E. does the work. You render the service without actually making the repairs.

Simple, isn't it? Profitable, too! Ask your distributor to tell you more about these Factory Service Plans—or fill in and mail this handy coupon. Start and keep service customers coming your way. *General Electric Company, Schenectady, N. Y.*



MOTORS

GENERAL ELECTRIC

BUY WAR BONDS

These Factory Service Plans will help you build extra business NOW

- 1. THE EXCHANGE PLAN** Covers the most commonly used types of G-E fractional-horsepower motors. Makes possible immediate replacement from G-E field stocks or from your own buffer stock. Replacement motors carry the G-E new-motor warranty, except for finish.
- 2. SPECIAL REPAIR SERVICE PLAN** Provides for factory repair of semi-standard G-E f-hp motors not covered by THE EXCHANGE PLAN, at established prices. Enables you to make quick, accurate, on-the-spot estimates. Repaired motors carry the G-E new-motor warranty, except for finish.
- 3. REGULAR REPAIR PLAN** Covers f-hp motors not included in either of the other two plans, except extremely old or obsolete models. Inspection is made at the factory, and a cost estimate is submitted before work is started. These motors also carry the G-E new-motor warranty, except for finish. This plan rounds out this G-E service and enables you to handle repairs on practically any G-E fractional-horsepower motor.

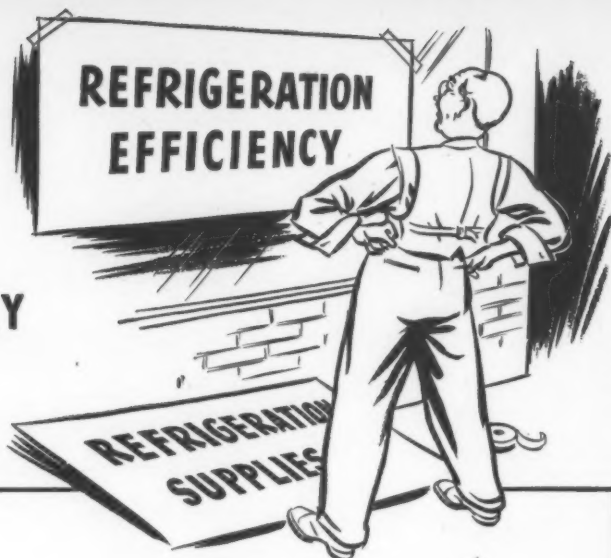
General Electric Company, Section K700-70C
Schenectady, New York

Please send me a copy of your booklet which describes your **FACTORY SERVICE PLANS** for fractional-horsepower motors.

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YES

REFRIGERATION EFFICIENCY IS *YOUR* BUSINESS, TOO



Whether you're a refrigeration service engineer, a dealer or a jobber, IT'S UP TO YOU to help make every refrigerating system operate at higher efficiency in doing its important home front job of protecting food and processing operations. That makes your business an important one. Refrigeration efficiency *starts* with control. An efficient refrigeration system must have efficient controls. You'll find the Alco line engineered for efficiency.

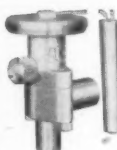
**GET THIS HANDY ALCO
CHECK LIST FROM YOUR
ALCO JOBBER TODAY.**

IT'S FREE!



Here's another handy Alco aid to refrigerating efficiency. It's a check list that helps you keep your stocks complete—saves you gas, tires and time by avoiding extra trips to your Alco jobber for items you've overlooked. Ask your Alco jobber. Alco Valve Company, 843 Kingsland, St. Louis, 5, Mo.

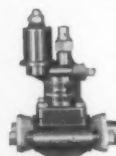
THE ALCO LINE OF ENGINEERED REFRIGERANT CONTROLS



Alco Thermo Valves. Designed for close control of refrigerant flow without "hunting." Thoroughly tested. Dependable. Available from stock for freon, methyl chloride, sulphur dioxide, ammonia; other refrigerants on special order.



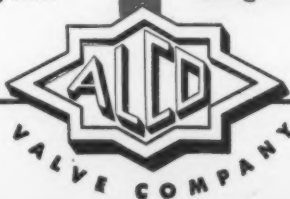
Alco Solenoid Valves. Quiet in operation. Waterproof. All working parts of stainless materials to prevent rust or corrosion. Positive flow control.



Evaporator Pressure Regulators. Maintain constant evaporator pressure regardless of sudden load or suction pressure changes. Exact, rapid performance on either single or multiple systems.



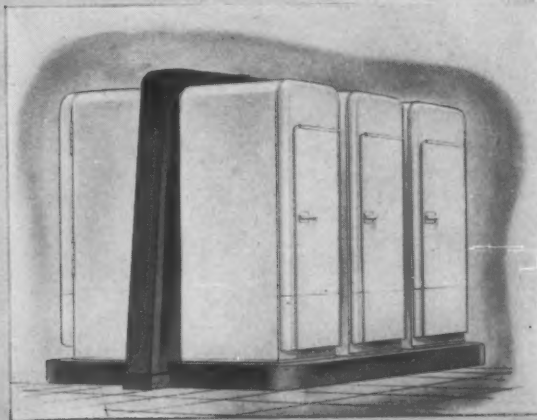
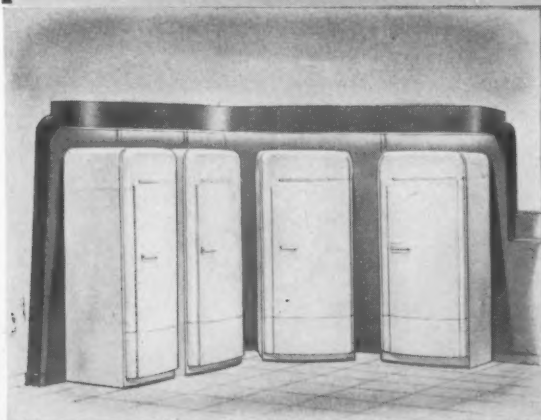
Alco Float Switches. Compactly built to control refrigerant in response to changes in liquid level. Welded shell withstands maximum pressure without failure. Also available for oil or water.



Designers and Manufacturers of Thermostatic Expansion Valves; Pressure Regulating Valves; Solenoid Valves; Float Valves.

HOW TO PLAN YOUR OWN STORE

TO THE successful dealer showmanship is an essential part of his business. Your store is a stage and your customers the audience; to make sales, you must be able to attract and hold the attention of this audience. Now is the time to start making plans for your store of tomorrow. To help you do this we are presenting here practical, easily-built store layouts and display fixtures. It will help you in your plans to make your store a center of your community and a modern background for your sales efforts. A handsome book in color describing these stores and fixtures in detail has been issued by the Admiral Corp., and through a special arrangement is available to REFRIGERATION INDUSTRY readers. Write the editor of Refrigeration Industry, 812 Huron Rd., Cleveland 15, Ohio, today for your copy.



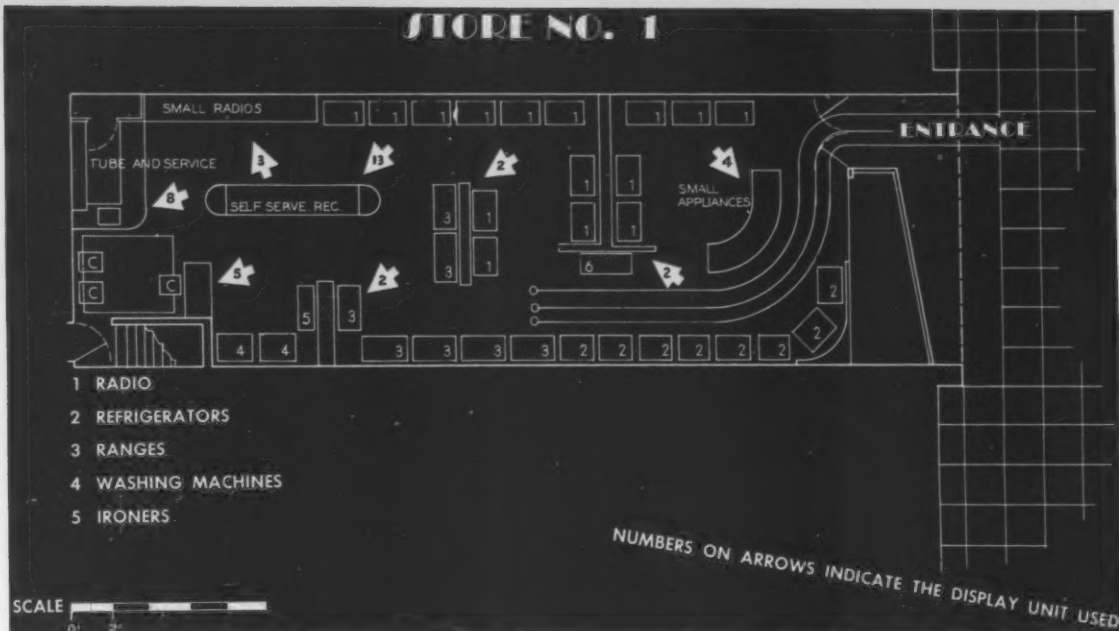
These pictures show two possible adaptations of the first store fixture unit, designed to display domestic refrigerators. For layout and floor plan of Store No. 1 and pictures of the individual fixtures, turn the page





STORE No. 1

See page 30 for free offer
to readers of
THE REFRIGERATION INDUSTRY



Store No. 1, first of a series of four designed for the Admiral Corp., by George W. Walker, internationally famous industrial designer, is shown in the color photo at left. The floor plan, above, shows arrangement of the various store fixtures.

SUCCESSFUL business men know that attractive, well-planned, tastefully decorated and lighted stores pay big dividends. Customers prefer to trade in such stores. But to be profitable, the materials and devices used in "dressing up" your store must be practical, durable and easy to keep new looking.

You are probably thinking now about how to remodel and modernize your store. This series will describe four examples of the best in modern store design, and show you how to use these ideas in your own application.

Some of the display fixtures illustrated are definitely background settings for appliances, extremely variable as the notes on each drawing indicate.

OTHER units, also variable in size and arrangement, are selling aids or conveniences. But whatever their use, all are modern and attractive in design, yet completely practical; light in weight for easy moving when rearrangements are desired, yet sturdy enough in construction to withstand constant use. Working drawings for these fixtures, as shown in miniature on the next page, are printed in larger size in the Flex-o-Plan book which is available upon request through THE REFRIGERATION INDUSTRY.

Plans for both fixtures and store layouts are simple and complete in every detail. Your local architect, contractor, carpenter, or you yourself, can build any or all of the items and be sure of satisfactory results.

TO make it easier for you to plan, to arrange and completely to visualize a store scheme for your own purposes, the Flex-o-Plan book provides cut-out diagrams of merchandise and fixtures. In addition, another extra large page is marked in squares to the scale of $\frac{1}{4}$ " to 1'. Thus, you may plan your own store exactly,

by drawing your actual floor space, allowing for such things as door openings, alcoves, posts or columns—being sure to allow sufficient floor space for such things as your service department, stock room and so on.

Store No. 1, illustrated on these pages, is the first of four typical store layouts. It illustrates what might be regarded as the smallest sized store practical for the sale of all home appliances. In it are indicated a minimum number of the display units or backgrounds presented in the Flex-o-Plan book and shown in miniature on the following page.

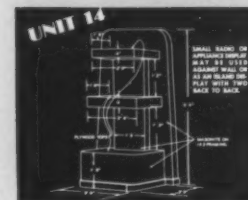
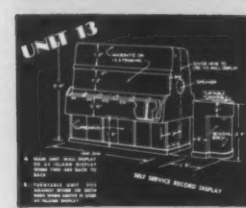
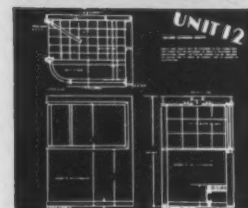
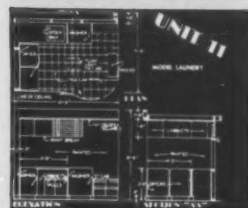
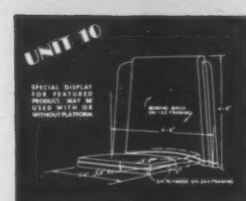
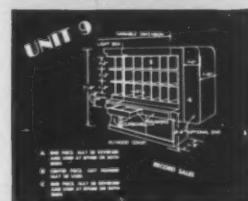
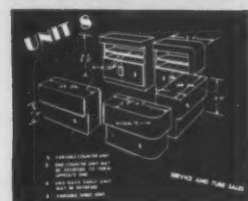
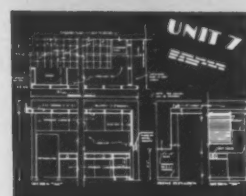
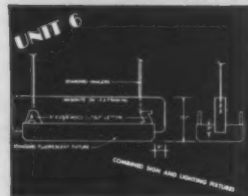
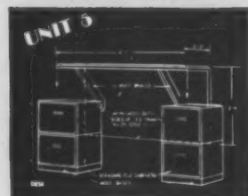
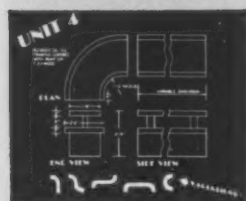
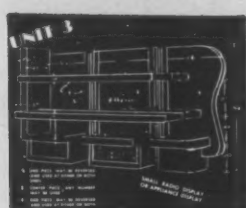
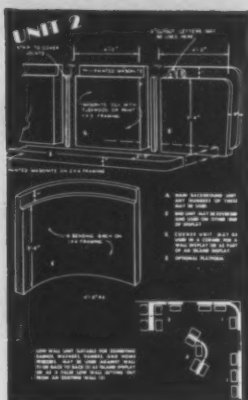
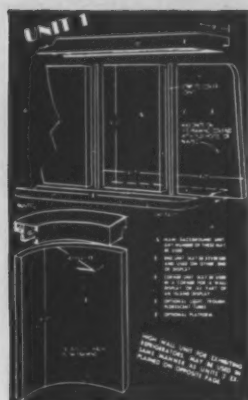
ATTRACTIVELY painted walls are employed to supplement the display units used. In this specific design it is assumed that the existing store front would not be changed and that stock room, files, manager's office, etc., would be located in the basement or other additional space.

Key features in planning your new sales room include full use of the many new developments in modern store fronts—shopper-stoppers. Large glass windows lend a feeling of spaciousness to a well-planned store; some of the new colored glasses are excellent store front building material.

MODERN floorings are another asset to profit-making store design. Often, in remodeling, a new floor-covering over the worn floor will change the entire appearance of the room. Areas where there is heavy traffic and resultant heavy wear should be covered with a tougher floor covering than that used, for instance, in an office or similar space.

A third key feature to keep in mind is the application of modern materials to the walls and ceilings. This is especially important where an old interior is being modernized.

BASIC UNITS FOR USE IN POST-WAR STORES



SHOWN on this page are 14 of the basic units presented in a portfolio by the Admiral Corp. Most units are display fixtures which can be quickly and easily constructed. Unit 1 is a straight or curved fixture for refrigerators; Unit 2, a lower fixture, can be used for home freezers, etc. Unit 3 is designed for display of small appliances, while Unit 4 is a more flexible scheme for similar use. Unit 5 is a desk, Unit 6 a combined departmental sign and lighting fixture. Unit 7 is a model kitchen; Unit 8 a counter

for small part sales, Unit 9 is a record case. Unit 10 is an island fixture designed for display of a featured product. Unit 11 gives the layout for a model laundry, and Unit 12 the plan for a record-listening

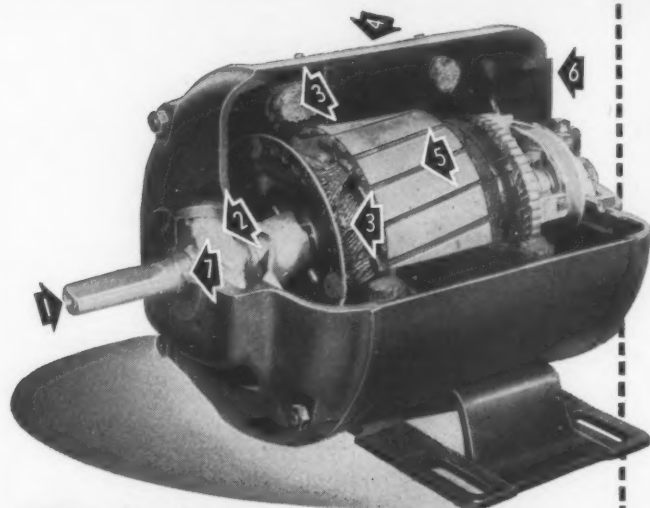
booth, while Unit 13 is a self-service record rack. Unit 14 is a tall fixture for display of small appliances.

Space limitations naturally prohibit larger reproduction of these plans. The Flex-o-Plan book, however, which gives complete details for the use, and large size working drawings for construction, of these units, is available free up on request.

Write to **REFRIGERATION INDUSTRY, 812 Huron Road, Cleveland 15, Ohio, today for your copy.**

Wagner MOTORS

**ARE DESIGNED FOR THE DEPENDABLE
OPERATION OF REFRIGERATION AND
AIR-CONDITIONING EQUIPMENT**



Study These Construction Features—

- 1 SHAFT** is designed to carry mechanical overloads without appreciable deflection or vibration.
- 2 LUBRICATION**—Long-strand wool yarn is used in all fractional-horsepower motors. Oil-wells are roomy and the yarn supplies plenty of oil, assuring perfect lubrication at all times.
- 3 WINDINGS**—The windings of both rotor and stator are of heavily-insulated wire and fit the slots without crowding. Completely insulated and securely wedged into place.
- 4 FRAME**—Motor frame is formed from heavy sheet steel. Electrically welded to form a strong, rigid, unbreakable frame that will not get out of alignment.
- 5 SLOTS** in rotor are skewed to reduce magnetic noise, and to eliminate variation in starting-torque at different positions of the rotor.
- 6 ENDPLATES** are concentrically machined and closely fit accurately machined frames, assuring perfect centering of shaft and uniform airgap.
- 7 BEARINGS** are steel-backed for strength and babbitt-lined to minimize wear. They are diamond bored after assembly in endplates and have a mirror-like finish.

Wagner MANUFACTURES A COMPLETE LINE OF MOTORS..

WAGNER SINGLE-PHASE MOTORS—Available in a wide range of sizes and variety of electrical and mechanical types . . . repulsion-start-induction, repulsion-induction, split-phase, capacitor-start induction-run, and shaded-pole.

Mountings: vertical or horizontal, rigid or resilient.
Frames: open, drip-proof or explosion-proof.

WAGNER POLYPHASE MOTORS—Available in several types of squirrel cage, wound-rotor, self-excited synchronous (Fynn Weichsel), and special air-conditioning and multispeed types.

WAGNER DIRECT-CURRENT MOTORS—Available in both appliance and industrial types. Compound wound.

MOTORS

are but one of several
WAGNER PRODUCTS
serving industry.

Other **WAGNER PRODUCTS**:
AIR BRAKES
BRAKE LINING
HYDRAULIC BRAKES
INDUSTRIAL BRAKES
INDUSTRIAL BRAKE CONTROLS
TACHOGRAPH
(Recording Speedometer)
TRANSFORMERS

These BRANCH OFFICES ARE READY TO SERVE YOU

ATLANTA • BOSTON • CHICAGO • CINCINNATI
CLEVELAND • DALLAS • DENVER • DETROIT
HOUSTON • INDIANAPOLIS • KANSAS CITY
LOS ANGELES • MEMPHIS • MILWAUKEE
MINNEAPOLIS • NEW YORK • OMAHA • PHILADELPHIA • PITTSBURGH • PORTLAND • ST. LOUIS
SALT LAKE CITY • SAN FRANCISCO • SEATTLE
SYRACUSE • TULSA • WASHINGTON, D. C.

Each of these offices is manned by trained field engineers ready to help you solve your motor-drive problems.

Write for Complete Information

Wagner Electric Corporation

ESTABLISHED 1891

6442 Plymouth Avenue, St. Louis 14, Mo., U. S. A.
ELECTRICAL AND AUTOMOTIVE PRODUCTS



M45-2E

M45-2B

LOCKER PLANTS . . .

Continued from page 24

the refrigeration dealer-service man can offer expert service as part of the job—and few locker plants have their own service man.

In a poll of its readers, a butchers' trade magazine found that 4,900 have definite locker plant plans under way. And naturally the first thing they do is call in their refrigeration man, the man who installed the display cabinets, the low-temperature equipment, the walk-in, the man who comes in

regularly to service this equipment.

For expert engineering advice where needed, the refrigeration man can turn to equipment and insulation manufacturers, some of whom have done much research in the locker building business, have built up a background of experience in the past decade and now stand ready to lend a hand to any qualified, sincere refrigeration contractor who wants to tackle locker plant construction.

And there's money in this business. Indeed, some experienced refrigeration contracting firms advertise their

willingness to handle all details of a locker plant job—from the ground up.

It is unlikely than any appreciable post-war slump will hit the locker business. For one thing, it's still in its infancy; exactly how and in what direction it will grow is practically anyone's guess. For another, millions of consumers during the war years have become accustomed to the idea of quick-frozen foods and consumption probably will continue to rise.

Some prophets predict that much of the home freezer business will fall naturally into the laps of locker operators; while some short-sighted operators insist the home freezer will compete directly with the locker plant. The consensus is that heavy purchases of home and farm freezers probably will force vastly expanded use of locker plant processing services. (The home and farm freezer post-war is the subject of next month's installment in this series).

Locker plants themselves, meanwhile, are showing some portentous trends. For example, since a zero locker room is hardly a comfortable

Continued on page 47

Service Engineers Should Know . . .



That the markings on the shoulder of each refrigerant cylinder reveal five important bits of information.



Front - Top Row

I. C. C. shipping container classification. This particular number (I. C. C. - 4B - 300) authorizes transportation of Sulfur Dioxide, Methyl Chloride, and certain other low pressure refrigerants.



Front - Second Row

This is the serial number which is used to identify the cylinder for all normal record purposes.



Front - Third Row

The letter in this position on the cylinder indicates the name of the company which manufactured the container.



Front - Bottom Row

These letters identify the registered owner of the container. (If complete identity of Nos. 3 and 4 row is ever required, write: Bureau of Explosives, 80 Vesey Street, New York, New York.)



Back of Cylinder

Hydrostatic test date markings. The top symbols indicate a previous test date, the bottom symbols the last test date. Figures at the left indicate the month, the Letter "T" means "Hydrostatically tested"; figures at right, the year the tests were made. The law says cylinders be tested once every five years.

Manufacturers of "Virginia" Refrigerants and Agents for Kinetic's "Freon-12"—"Freon-22"—"Freon-11".

VIRGINIA Smelting Co.

WEST NORFOLK, VIRGINIA

76 BEAVER ST., NEW YORK 5 : 131 STATE ST., BOSTON 4



Why the Trend Is Strong to CHICAGO SEALS and VALVE PLATES



Chicago Seals and Valve Plates make a better servicing job on all refrigerators, in less time, at less cost, at more profit . . . and more service men and more jobbers are finding out this fact every day.

CHICAGO SEAL CO.
20 North Wacker Drive, Chicago 6, Ill.

SNAP...IT'S OPEN

NO "STICKAGE"

SNAP...IT'S CLOSED

Henry Diaphragm Relief Valve

For Instantaneous Pressure Relief with Fast and Positive Reseating

Design of this relief valve is unique in that it incorporates a diaphragm construction with an unusual seating arrangement. The result is an opening and closing snap-action movement. Large surface area of the pressure actuated diaphragm causes instantaneous relief as compared to gradual opening in conventional spring loaded relief valves. When the pressure in a system reaches the relief point, wire drawing, which may ruin a valve seat, can not take place because there is no slow movement of the valve seat disc in the Henry Diaphragm Relief Valve.

This valve is recommended for protection to a system containing a large charge of freon or methyl chloride refrigerant. It may be employed either for relieving high side or low side to atmosphere. It can also be installed so as to relieve from high to low side of system. It meets the requirements of all existing safety codes. Due to its acknowledged efficiency through dependable performance under all conditions of service, the Henry Diaphragm Relief Valve is today widely used in refrigeration and air conditioning installations of the Army, Navy and Maritime Commission.

The Henry Diaphragm Relief Valve is available in $\frac{1}{2}$ " F.P.T., $\frac{3}{4}$ " F.P.T., $\frac{1}{2}$ " O.D. and $\frac{3}{4}$ " O.D. Solder connections and at pressures ranging from 90 pounds to 300 pounds per square inch. Each valve is individually adjusted, set at pressures ordered and marked with its rated free air passage capacity per minute. Locking device prevents tampering with pressure setting or changes in setting due to vibration.



FOR FREON AND METHYL CHLORIDE REFRIGERANTS

Type 542. With solder connections. Extended tube sockets at inlet and outlet ports prevent transfer of installation heat to internal parts.



Type 541. With female pipe thread connections.



Henry Products
Are Sold by Leading Jobbers
Everywhere

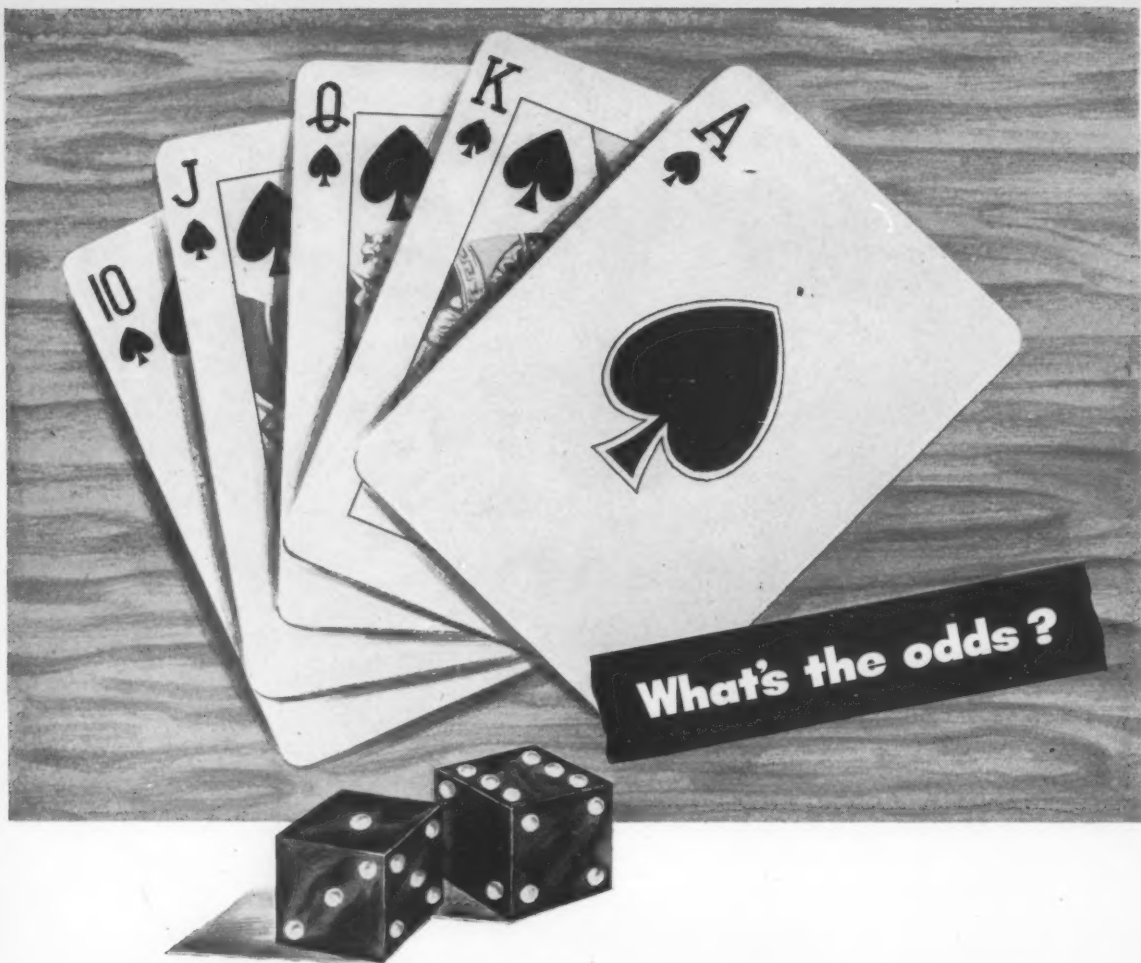


HENRY VALVE CO.

3260 West Grand Avenue, Chicago 51, Illinois

EXPORT DEPARTMENT, 15 EAST 40TH ST. NEW YORK, N. Y.

PACKLESS AND PACKED VALVES • STRAINERS • DRYERS FOR REFRIGERATION AND AIR-CONDITIONING • ANNOHIA VALVES • FORGED STEEL VALVES AND FITTINGS FOR OIL, STEAM AND OTHER FLUIDS



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Parts Handbook.

Frankly, we're not certain of our statistics on those combinations.

We're more interested in down to earth figures that mean something to your business. 16,000 different parts for all makes of electric motors, fans and controllers carried in our warehouse gives you odds of 16,000 to 1 that we'll have what you need right in stock.

Just to make those odds a bit more attractive, we want to mail you a free copy of our 136 page Renewal Parts Handbook so that whether you're in Maine or California, you will have all of the facilities and conveniences of our complete stock at your fingertips. A postcard or letter today is all the "ante" you need.

PARTS FOR FANS, MOTORS AND
CONTROLLERS, BRUSHES, BEAR-
INGS, AND COMMUTATORS



complete-reading electric co.

100 S. JEFFERSON STREET

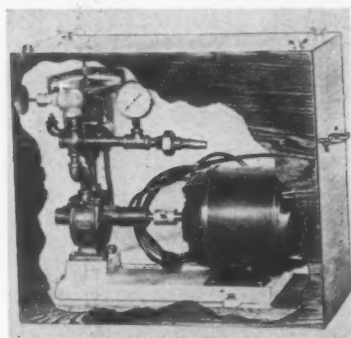
CHICAGO 6, ILLINOIS

New PRODUCTS

Testing Unit

An easily carried vacuum and pressure unit for gas or air, to be used for operating several types of equipment for either test purposes or for temporary operation, has been developed by Leiman Bros., Inc., Newark.

These portable units will handle from 1 to about 5 cu. ft. of air and at a pressure up to 10 lbs. or 20 inches



mercury vacuum, and are said to accomplish any purpose for which air or non-corrosive gas might be used.

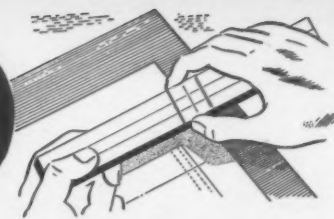
Units weigh from 10 to 20 lbs., and may be furnished as small as about 6 x 10 inches and as low in height as 6 to 8 inches. They may be equipped with interchangeable motors for various currents found in different sections, with some directly connected to the motor shaft.

Explosion Proof Motor

Century Electric Co., St. Louis, Mo., announces a new explosion proof motor for operation in ethyl ether vapors (class I, group C).

This motor is constructed to meet the specifications of and carry the label of Underwriters Laboratories Inc. for class I, group C installations where the surrounding atmosphere is charged with ethyl ether vapor.

This is in addition to Century's other explosion-proof motors for other hazardous locations: class I, group D, gasoline vapor; class II, group E, metal dust (magnesium); class II, group F, carbon black; class II, group G, grain dust.



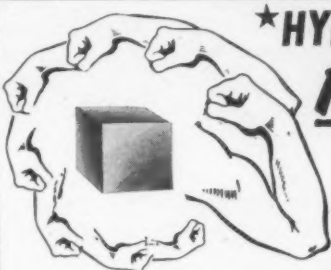
New Type Cooling Towers

The Cooling Equipment Division of the Binks Manufacturing Company, 3114-40 Carroll Avenue, Chicago, announces an entirely new departure in small cooling tower design, in which

the air propulsion unit consists of a slow-speed double-inlet blower, resulting in exceptionally quiet operation. This new type tower is produced in five frame sizes suitable for the water cooling needs of refrigeration condensers up to 20 tons capacity.

Freezer Hardware

A new line of locks and hinges especially designed for farm freezers and normal temperature reach-in refrigerators is announced by the Kason Hardware Corp., to accommodate special heavy doors up to 1½" offset.



★HYDRAULIC-ACTION gives you POSITIVE ACTION

because solid-liquid-filled bulb and capillary provide expansion force comparable to that of a solid-metal bar.

EXPANSION and contraction of a metal with heat and cold is definite and exact. With each degree of temperature the amount of expansion is exactly the same.

A tube or pipe, completely filled with liquid is compar-

able to a solid-metal bar. The rate of expansion or contraction of the liquid, like that of the bar, is definite and predictable.



Ever see a frozen water pipe? The terrific force of the expansion of the water cracks the strong iron pipe as effortlessly as you would tear a sheet of paper.

Hydraulic-Action, an exclusive feature of White-Rodgers temperature controls, gives positive action at every degree in the range of temperature for which it is designed.

Hydraulic-Action—how it works

The diagrams below picture the action of the solid-liquid charge in actuating the diaphragm that opens and closes the switch mechanism of the control.

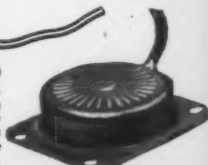
CONTRACTED

Above is a cross section of the diaphragm and part of the liquid-filled capillary. In this view, the liquid has contracted, releasing pressure on the diaphragm and causing the switch contacts to function.

In this cross sectional view, the liquid charge of the capillary has expanded with a rise in temperature. The positive force of this hydraulic action forces the diaphragm outward and causes the switch contacts to function.

EXPANDED

Actual size illustration of the White-Rodgers Hydraulic-Action diaphragm body, the actuating element of every White-Rodgers temperature control. It is so designed as to exert full pressure at the point of contact with the switch mechanism.



8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.

★ 2. Hydraulic-Action Principle incorporating solid-liquid-filled bulb and capillary provides expansion force comparable to that of a metal bar.

3. Diaphragm motion uniform per degree of temperature change.

4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.

5. Heavier, longer-wearing parts are possible because of unlimited power.

6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.

7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.

8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.



WHITE-RODGERS ELECTRIC CO.

1225A Cass Ave.

St. Louis 6, Missouri

Controls for Heating • Refrigeration • Air-Conditioning



Temprite ACCUMULATOR-INTERCHANGER IMPROVES...

... OPERATION OF LOW TEMPERATURE INDUSTRIAL REFRIGERATION CABINETS *

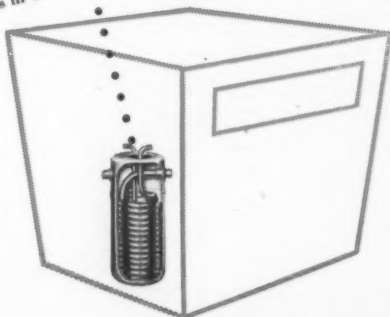
Manufacturers of industrial refrigeration cabinets know that Temprite's Accumulator-Interchangers improve the operation of their low temperature refrigeration equipment.

That is why Temprite's engineering staff is called on by many manufacturers at the start of new designs because they realize that, if best results are to be obtained, the accessory equipment must be incorporated in the basic unit.

This "Temprite Service" may be of value to you and your designers in the

application of standard accessories or where these standard items do not meet your exact requirements, in the design of special items for your individual problems.

If you have any present or postwar designing problems involving the use of heat exchangers, oil separators or temperature control valves, Temprite extends an invitation to you to call upon their staff of experienced refrigeration engineers—just write our sales department today and a meeting will be arranged at your convenience.



* Temprite Accumulator-Interchanger improves operation by: 1. Permitting one-hundred per cent of the evaporator coil surface to become effective because it eliminates any necessity for using a part of this coil as a drying agent for the refrigerant; 2. By eliminating the return of liquid refrigerant to the compressor crank case and; 3. By preventing formation of flash gas in the evaporator coil.

Rema Plans Wider Program

PLANS for a broadened program of activities, both in its own behalf and in the general interests of the refrigeration and air conditioning industry, were mapped by Refrigeration Equipment Manufacturers Association at its recent meeting in Hot Springs, Va.

Contemplated is a "public relations program" with a twofold objective: 1. Educating the public in the importance of refrigeration in the many phases of our life today; 2. Promoting new markets, by means of newspaper, magazine and radio publicity, to help the industry compete successfully for its share of the consumer's dollar.

It appears likely that a project of some sort may be put into effect in 1945, although plans are indefinite as yet. At the outset, at least, costs would be borne by Rema members.

A. B. Schellenberg, Rema president, in his address proposed an all-industry organization that "would be truly representative of, and could speak with the voice of authority for, the industry."

Rema is definitely planning to continue its sponsorship of the All-Industry Refrigeration and Air Conditioning Exhibitions. C. H. Benson, chairman of the committee in charge of the exhibition, promised that this activity would be resumed "as soon as conditions permit."

New Rema members since April of 1944 include: Curtis Refrigerating Machine Division, Curtis Mfg. Co.; McQuay, Inc.; Merchant & Evans Co.; Puro Filter Corp. of America; Revere Copper & Brass, Inc.; Servel, Inc.; Tyler Fixture Corp., and Westinghouse Electric & Mfg. Co.



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4. Air Conditioning Systems

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Presenting a resume of a survey of jobbers to get their ideas on postwar trends, F. J. Hood brought out the following points:

No great changes in the nature of the parts jobbing business are expected, although some firms are thinking of broadening lines.

As far as selling "package" unitary equipment postwar is concerned, most jobbers seem to feel that major manufacturers' policies will be the de-

termining factor. It is generally felt, however, that the refrigeration service company will be a most important factor in postwar merchandising.

Shown in these pictures are:

1. *F. J. Hood*, Ansul Chemical Co.; *K. B. Thorndike*, Detroit Lubricator Co., and *L. C. McKesson*, Ansul Chemical.

2. *M. G. Kingsland*, Minneapolis-Honeywell Regulator Co.; *H. E. Schreiner*, Northern Indiana Brass Co., *Ed Kellie*, American Injector.

3. *J. A. Strachan*, the Weatherhead Co.; *C. H. Benson*, Imperial Brass Mfg. Co.; *C. A. McArthur*, Bush Mfg. Co.; *George Vermilye*, Ansul Chemical Co., and *W. A. Siegfried*, Superior Valve & Fittings Co.

4. Conferees watch an amusing incident on the Homestead's bridle path. Here are *H. G. Hildreth*, Westinghouse; *Gordon Wootton*, WPB refrigeration section chief; *H. F. Spoehrer*, Spoehrer-Lange Co.; *George Vermilye*; *Wes Siebert*, Deepfreeze; *Nelson Cooper*, du Pont; and *E. A. Vallee*, Automatic Products Co.

5. *R. K. Hanson*, Rema secretary; *R. H. Luscombe*, Penn Switch; *Mr. Benson*; *A. B. Schellenberg*, Alco Valve Co., Rema president; *Mr. Spoehrer*.

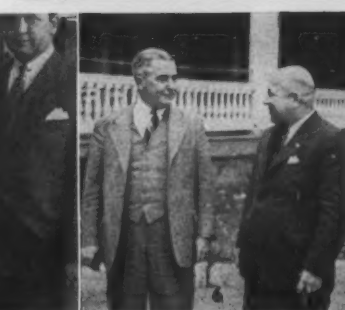
6. *E. M. Flannery*, Bush Mfg. Co., with *B. J. School*, Brunner Mfg. Co.

7. *Frank Smith*, Tecumseh Products Co.; *J. W. Hatch*, Bush; *Paul Reed*, Perfex Corp.; and *K. M. Newcum*, Superior Valve.

8. *Wes Siebert*, Deepfreeze; *C. E. Scott*, Fedders Mfg. Co.; and *Tom Binder*, American Coils Co.

9. *Gordon Wootton*, with *G. E. Graff*, Ranco, Inc., and *R. S. Dawson*, Alco Valve Co.

10. *Mr. and Mrs. L. A. DeMore*, Dole Refrigerating Co.; *V. Stagg*, Williams Oil-O-Matic Co., and *Mr. and Mrs. O. L. Rose*, also of Dole.



A FILTERING ELEMENT IS NOT ONLY DESIRABLE BUT IMPERATIVE IN AN EFFICIENTLY OPERATING DEHYDRATOR

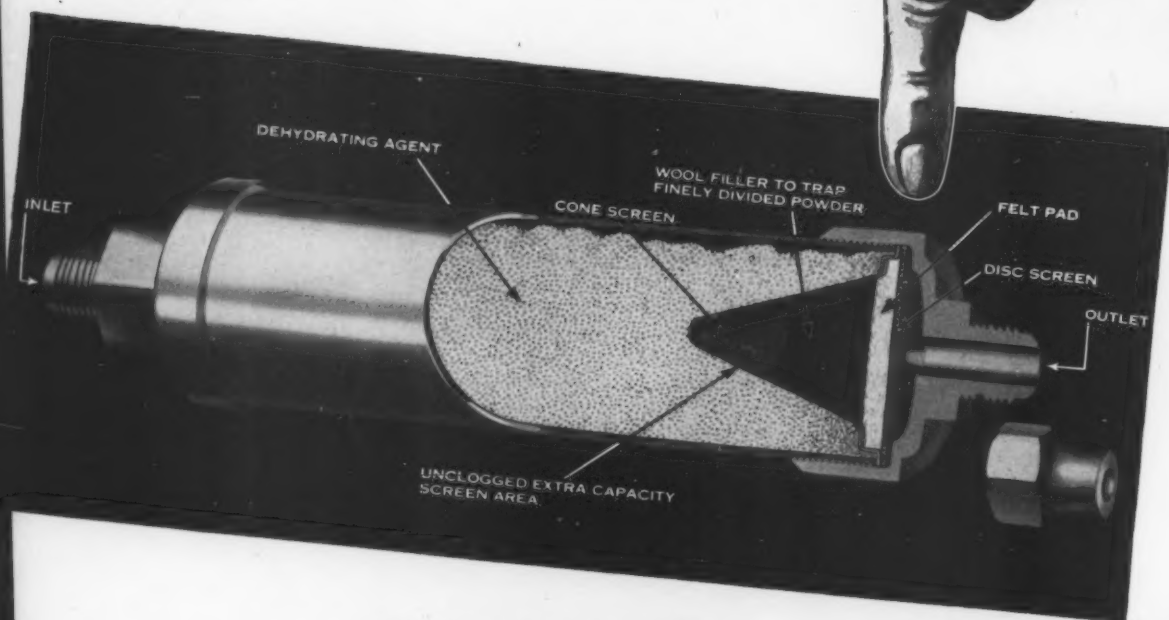
Mueller Brass Co. Filters and Driers feature the CONE SCREEN OUTLET, a specially designed filtering element that adds immeasurably to the life and efficiency of driers and filters.

Almost all crystalline dehydrating agents are subject to a certain amount of abrasion while a dehydrator is in service. Small portions of the dehydrating agent break down into very fine powder and crystals. Unless a well-designed filtering element is incorporated in a dehydrator, these fine crystals and powder have a tendency to clog the outlet filter, resulting in restriction to the flow of refrigerant.

With the MBCo. CONE SCREEN OUTLET, such finer crystals and powder are forced to the base of the cone, leaving the center and tip of the screen open to the free flow of refrigerant.

In addition, the cone screen is filled with pure wool which traps such particles that are sufficiently fine to pass through the screen mesh.

Particular attention has been paid to screen areas in Mueller Brass Co. Filters and Dehydrators, so that each size permits efficient passage to the maximum refrigerant volume that is used in a particular size refrigerant line.



Write for Catalog No. 2007

MUELLER BRASS CO.
PORT HURON, MICHIGAN

YOU ASKED FOR IT...

here it is!

JOBBER!

**ACT TODAY
AND PROFIT**

*with this
Easy-Selling Line*

**IMMEDIATE
DELIVERIES**

Watch this magazine for still
further announcements of
"Equipment of the Future"
NOW



LICENSED UNDER
Latent Cooler Patents
Patent Pending

THE AMCOIL FOOD CONDITIONER IN A REACH-IN PANEL UNIT

Combines high, controlled humidities (up to 85%) with cooling temperatures down to 36° F. Preserves without dehydration.

THE Amcoil Food Conditioner Reach-In Panel Unit is the answer to a growing demand for the principles of the famous Amcoil Food Conditioner, in a smaller unit of medium BTU capacity, adapted for reach-in and small walk-in coolers.

Designed to occupy a minimum of space, it is a complete package unit. When combined with a condensing unit it produces an economical refrigeration system that not only cools, but also preserves foods by preventing detrimental dehydration. It is completely automatic with a humidistat controlling the humidity at a predetermined level.

Model RIF 38.....4600 BTU Capacity at 15° T.D.
Model RIF 43.....5500 BTU Capacity at 15° T.D.

Also Available Now

Amcoil Alservice Reach-In Panel Cooling Unit

Similar in appearance to the Reach-in Panel Food Conditioner, here is a compact down draft cooling unit that will meet all utility refrigeration requirements in reach-in and small walk-in coolers. Cooling temperatures down to 36° F.

Model RI 40.....5250 BTU Capacity at 15° T.D.
Model RI 45.....6150 BTU Capacity at 15° T.D.

DEALERS

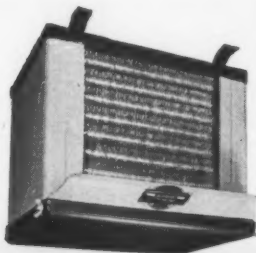
Profit by Quick Action With This Complete Line - Immediate Shipment From Your Local Jobber Or Direct From Us



AMCOIL COMFORTAIRE CONDITIONER-A new development in air-conditioning, this completely automatic unit creates cool, dry, comfortable air at a fraction of the cost of re-heat systems. This is made possible by the use of the new and novel latent cooler patents.



AMCOIL FOOD CONDITIONER. A wall mounted unit combining high, controlled humidities up to 85% with temperatures of from 35° to 40° F. Designed for walk-in boxes it automatically preserves foods without dehydration. Can be used effectively to store meats; fruits and vegetables, butter, cheese, eggs, flowers, bakers and confectioners products, to retard dough, etc.



AMCOIL ALSERVICE OPEN FACE COOLING UNIT. Is designed for efficient cooling and serves as a general utility unit in preserving foods and other commodities where a forced draft cooling unit is required. Streamlined design, in attractive grey and black color scheme, it can produce temperatures down to 34° F.

NEW

A STILL SMALLER ALSERVICE REACH-IN PANEL COOLING UNIT

Now Ready for Delivery

Model RI 25-3250 BTU
Capacity at 15° T.D.
Model RI 30-3000 BTU
Capacity at 15° T.D.



ZERO BREEZE LOW TEMP. UNIT. A low temperature unit equipped with automatic electric defrost... wall-hanging model... produces temperatures from -20° F. to -20° F... defrosts automatically on each cycle.

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J. E. Oliphant & Co., 503 Uhler Bldg., Marion, Ohio
R. Barthelme Sales Co., 1711 Chalan Ave., Jacksonville, Fla.
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NO MATTER HOW COLD



IT'S ALWAYS *Fair Weather* FOR MILK COOLERS
EQUIPPED WITH *Ranco 0-1414*

If, in winter weather, the location of a milk cooler temperature control switch is at a point where the temperature is much colder than that desired in the cooler, serious problems may result if ordinary controls are used . . . but NOT for the user of the Ranco 0-1414.

The Ranco 0-1414 may be subjected to extremely cold winter temperatures and function perfectly.

Specify Ranco 0-1414 for trouble-free milk cooler temperature control.

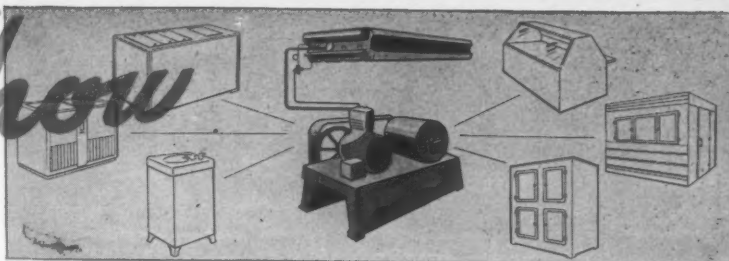
WORK WITH YOUR Ranco JOBBER

Ranco Inc.
COLUMBUS 1, OHIO

"Let's share our knowledge—exchange our experiences"

Here's how

Edited by
Warren W. Farr

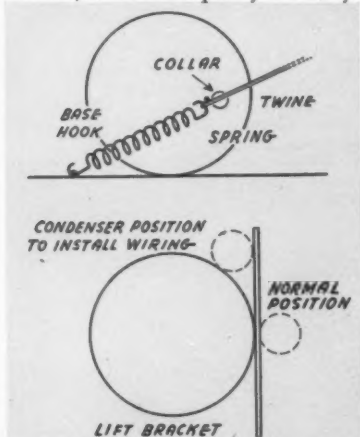


Simplified Motor Exchange

Joe Gerson, Jackson, Tenn., has developed a simplified method of removing and replacing motors on the Leonard refrigerator using single-cylinder compressor and Emerson cradle-mounted motor, which was produced for about three years.

The method which he uses is outlined below:

First, remove fan pulley assembly.



Second, remove nuts and washers holding motor in cradle, disconnect leads and spring, and lift out.

To replace, do this in reverse, except to get spring onto collar on end of motor bolt, engage end of spring with strong piece of twine or wire, pull into place, and hook spring.

To replace wiring, pull motor around until condenser can pass under lifting bracket, thus locking motor in an upright position. This changes a rather tedious job of replacing leads to a simple operation.

Odorless Purging

Wolverton Refrigeration Service Co., Dallas, Tex., uses a heavy-duty three-way valve for discharging

units and switching to the vacuum pump without changing connections. This saves disconnecting the line or handling more than one valve. H. W. Wolverton says this saves time and labor, and eliminates the possibility of getting gas fumes into the home or place of business. It is especially good where sulphur dioxide is used as a refrigerant.

More Power to You

Mechanical engineers tell us that it takes six times as much power to start a fly wheel from a dead stop as it does to keep it going once it is in motion. In other words, it takes only one-sixth as much effort to keep going once you are on the way as it does to stop a bit, and start again. When tempted to slacken just because things aren't coming your way, remember the fly-wheel.

IF YOU CAN WRITE YOU CAN HELP

Every man who has served for any length of time as a service engineer has had one or more experiences that would help his fellow engineers. Safety precautions, a new way to do a job, a new tool or better use of existing tools, a simplified procedure—incidents almost too numerous to mention.

If you can write, you can briefly describe the condition or device. A drawing or picture will help demonstrate.

This appeal is directed to every reader of THE REFRIGERATION INDUSTRY.

Will you lend a hand?

THE REFRIGERATION INDUSTRY pays \$5.00 for each idea published.

Service DO's and DON'T's

DO:

1. Check refrigerator temperature.
2. Check oil in motor bearings.
3. Check belts for proper tension.

DON'T:

1. Argue with your customer.
2. Criticize previous service man.
3. Patch up job; suggest proper repairs.

Handy Tools

Many times a screw slot is so located that it is below surrounding surface, and when screw driver is inserted in the opening the screw slot cannot be seen.

Mark the position of the screw



driver bit on the back of the handle and you can easily tell when the bit is in the proper direction.

A tool marked this way is extremely valuable in adjusting controls as it is easy to tell how far the adjustments have been turned by watching the marking on the back of the handle.

New York Health Ruling

The Department of Health of New York City recently added a section (No. 170) to the sanitary code governing the addition of chemicals to the water supply in buildings for anti-corrosion or anti-scaling purposes. In the belief that the regulations may be interesting to service men in other cities as well, we report them here.

The regulations provide that "no person shall in the City of New York

THE SERVICE MAN'S DEPARTMENT

add, or engage in or by a sign or otherwise advertise or hold himself out as engaged in the business of adding, any chemical or other substance to the water supply within a building without a permit therefore from the Commissioner of Health."

Such addition of chemicals shall be for anti-corrosion or anti-scaling purposes only, the regulations state, and shall be performed in conformity with the terms and conditions of the permit and Board regulations.

The code prohibits the addition of any chemical or other substance to

the water supply furnished to any person for domestic use or human consumption "unless such addition or treatment is performed by the holder of a permit from the Commissioner of Health and in accordance with the regulations of the Board of Health."

Oilless Bearings

Wide acceptance of the oilless bearing for air conditioning fans makes it desirable for the service engineer to know something of their care and maintenance.

One of the weak points of the oil-

less type bearing is that there is no lubricant continually washing out foreign material. As a result, the most frequent service call deals with cleaning out the bearing.

A good solvent should be used to remove the dirt from the interior of the bearing, and jewelers rouge on a rag saturated in oil can be used to clean the shaft. Jewelers rouge is inexpensive and can be secured from most abrasive houses or in small quantities from jewelers.

Before reassembling the shaft and bearing, use a little high temperature grease mixed with powdered graphite to lubricate the parts. This lubricant will also protect the bearing ends for a while against dirt.



NIBCO WROT Fittings are formed in one step from straight copper tubing. They are strong, light in weight and dense in structure . . . impervious to gases. Because every fitting is perfectly formed and absolutely "round and square," they are easier to use in production. Laboratory Control and individual plug testing assure close tolerances. You can eliminate service troubles by using vibration-proof and corrosion-proof NIBCO WROT Fittings. Write for complete catalog.



NORTHERN INDIANA BRASS CO.

ELKHART, INDIANA

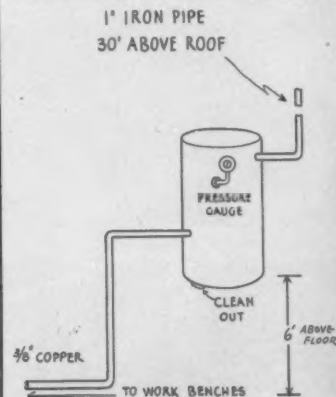
VALVES AND FITTINGS SINCE 1904



*I do it
this way...*

Here's a description of a home-made device we use in our shop to purge out dirty refrigerant gases and at the same time trap oil and other matter to prevent it from blowing outside.

We use a standard 50-gallon oil drum, set about 6 feet from the floor, with lines of $\frac{3}{8}$ -in. copper



tubing leading into it from individual work benches, and a 1-in. iron pipe attached to the other side for venting refrigerant gases to the outside. This pipe is carried to a point 30 ft. above the roof.

Through a clean-out plug in the bottom of the drum, oil and other matter can be removed regularly. A pressure gauge, installed on the drum, tells us when the outside line becomes stopped up. Setting drum 6 ft. from the floor allows drainage from clean-out plug, and also permits us to take advantage of higher room temperature to help dissipate gases.

W. F. Mercier, Detroit.

WEST COAST JOBBER MEET

Members of the Pacific Coast Jobbers Association met recently at Fresno, Calif., under the chairmanship of G. C. Armour of Arbell Refrigeration Supplies. Principal accomplishment was the establishment of a credit information exchange, covering all refrigeration service companies in the area, and extending to both new and past due accounts.

At the noon luncheon, a number of manufacturers' representatives were guests. Informal sessions in the afternoon and a trip to the Arbell headquarters completed the business meeting.

Present were H. G. Stern, Refrigerative Supply, Seattle; L. P. Roth, Refrigeration Service, Inc., H. E. Clay, Authorized Supply Corp., and Peter H. Askew and Merle F. Stutzman of Refrigeration Supplies Distributor, Los Angeles; G. C. Armour, Arbell Refrigeration Supplies, Fresno; W. C. Miessemer, W. C. Miesse-

mer Refrigerative Supply Co., Phoenix; and Jess E. Rauch and Cliff Swezy, California Refrigerator Co., Wyatt R. Brown, Wyatt R. Brown Co., W. F. Davidson, Hinshaw Supply Co., and N. W. Edwards and F. H. McLaughlin, Refrigeration Power Specialties, all of San Francisco.

Next meeting of the group has been set for San Francisco in March, at which Mr. Rauch will be chairman.

TYLER FIXTURE BUYS HARDER REFRIGERATOR

Tyler Fixture Corp., Niles, Mich. has purchased Harder Refrigerator Corp. of Cobleskill, N. Y., peacetime manufacturer of household and commercial ice refrigerators.

Sam VanerWeg of Tyler will be acting manager of the Cobleskill factory, and Willard Aker, now works manager of the Harder company, will continue in that capacity.

This is Tyler's second expansion move since the beginning of the war, the company having acquired Kay Products Co. in 1942.

ONTARIO LOCKER GROUP TO MEET

The Ontario Frosted Food Locker Association has announced that its annual convention will be held at the King Edward Hotel, Toronto, January 15 and 16. Business sessions for the two days will feature speakers and discussion on processing, wrapping and merchandising of frozen foods.

Home lockers and their relation to the locker operator, as well as requirements of a modern locker plant are other subjects slated for discussion. The program will also include a banquet and entertainment.

NEW ADDRESS FOR SPOKANE JOBBER

Spokane branch of Refrigerative Supply, Inc., parts and supplies jobber, expects to be in a new location by January 2, reports T. L. Wright, branch manager. The new address will be West 304 Third Ave., Spokane 8.

The new location is in a building 60 x 150 feet, with a 30 x 60 display room, 30 x 30 parts room, three office rooms, and a 60 x 90 warehouse space. In addition to its regular stocks of parts and supplies, the branch plans to distribute display cases, reach-in and walk-in units.

HIGGINS ANNOUNCES APPLIANCE DIVISION

Higgins Industries, Inc., builders of famous wartime landing craft, have announced establishment of an Appliance Division for distribution of nationally known commercial and domestic products in the New Orleans territory.

As examples of the home and commercial products to be handled, the



J. O. Crary (center) manager of the appliance division of Higgins Industries, with W. H. Bramblott, domestic manager, and L. V. Busenleiner, commercial manager.

announcement cited cordless electric irons, television and FM radios, automatic washers and dryers, home and farm freezers, and compact self-contained air conditioning units. Headquarters and display rooms for the Appliance Division will be at 521 City Park Avenue, New Orleans.

J. O. Crary, manager of the new division, said dealership inquiries are invited from Louisiana, Southern and Central Mississippi, southern Alabama and western Florida. Some franchises already have been accepted, he said.

T. W. BINDER CO. HAS NEW OWNERS

The firm of T. W. Binder Co., wholesale refrigeration supply jobbers, has been acquired by Theodore and Sidney Yecies. The company will operate under the same name as before, and all employees will continue in their present positions.

Mr. Theodore Yecies, who will devote full time to this business, advises that the company will continue to handle refrigeration and air conditioning supplies exclusively, to be sold exclusively to the refrigeration industry.

Whitman Freeman, who has been with T. W. Binder Co. for the past 12 years as manager, will continue in that capacity.

I do it
this way...

Here's a new use for old capillary tube and thermal bulb assemblies removed from defective thermostatic expansion valves.

The assembly illustrated above can be used to stop the water valve chatter, and also as high pressure gauge connection to prevent excessive fluctuating.

Cut the end of the thermal bulb off about 1/2 in. from the pinched

end and solder on a 3/8 x 1/4 in. sweat coupling a short length of 1/4-in. tube with a 1/4-in. nut and flare at the end. On the capillary tube end, sweat a piece of 1/4-in. tube which has been pinched to fit around the small tube, install flare nut and flare end of copper tubing.

Remember that the 3/8-in. tube end should be attached to the discharge of the compressor, as this end forms a muffling chamber.

George J. Schuld, Cleveland, Ohio.

Electrimatic Regulating Valves

Automatic control and regulating valves for Freon, Methyl Chloride and Ammonia. A large variety of sizes and types available for practically any refrigeration requirement.



WL water regulating valves for Freon, Methyl, or Sulphur. $\frac{3}{8}$ " orifice and $\frac{1}{2}$ " FPT. Brass body construction. Large capacity—no chatter.

WP water regulating valves are available in $\frac{1}{4}$ ", $\frac{1}{2}$ " and $\frac{3}{4}$ " FPT sizes. Brass body construction for Freon, Methyl or Sulphur. Easy adjustment.



WK water regulating valves are De Luxe Pilot Operated Modulating valves. Iron body, simple adjustment. Available in sizes ranging from $\frac{1}{4}$ " to 2" FPT.

WR regulating valves for Ammonia are diaphragm operated and highest quality corrosion resistant materials are used. Available in sizes ranging from $\frac{1}{4}$ " to 2" FPT.

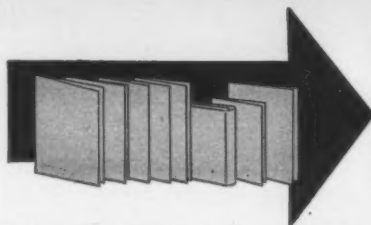


Electrimatic valves are individually tested for efficient, economical operation. Trouble free performance.

Ask for a copy of our latest catalog today.

Electrimatic

2100 INDIANA AVENUE
CHICAGO 16, ILL.



Useful Literature

The publications featured on this page were written by experts. They are FREE publications. To obtain these write to THE REFRIGERATION INDUSTRY, 812 Huron Road, Cleveland, 15, Ohio. If there is some delay in receiving the material requested, please understand that this is due to our operating with a minimum staff. We shall put through all requests as rapidly as possible.

96—Welding Fittings . . . A 20-page booklet giving allowable working pressures for welding fittings in five classes of piping: refrigeration, power, oil, district heating, and gas and air. Issued by Tube Turns, Inc.

97—Metering and Waste Valve . . . A bulletin (D-771) giving description and application of its recently-announced metering and automatic waste valve for water supply lines. Issued by Alco Valve Co.

98—Industrial Timers . . . A four-page bulletin (No. 4492) outlining engineering features and describing operation of its 2400, 2500, and 2900 series of industrial timers. Issued by Paragon Electric Co.

99—Cleaner . . . A descriptive folder on Pennsalt EC-10 cleaner, outlining its uses. Issued by the Special Chemicals Division of Pennsylvania Salt Mfg. Co.

100—Products Catalog . . . An 84-page bulletin containing information on various types of heating, cooling, air handling and air conditioning equipment that will be available for civilian use once current restrictions are lifted. Issued by The Trane Co.

101—Lathes . . . A catalog (100-D) describing its lines of engine lathes, and precision turret lathes, and listing capacities, speeds, feeds, and dimension of each. Issued by South Bend Lathe Works.

102—V-Belts . . . A new handy conversion chart and price list for fractional horsepower V-belts. Lists size and conversion data on various belts for refrigeration.

tors, other appliances, blowers, etc. Issued by B. F. Goodrich Co.

103—Locker Information . . . A booklet, "Before You Build Your New Locker Plant", listing useful background information. Issued by Frozen Food Locker Mfrs. and Suppliers Association.

104—Air Conditioning . . . A 16-page illustrated booklet discussing how to plan proper air conditioning for a specific application and picturing and describing equipment. Issued by Westinghouse Electric Elevator Co.

105—Engineering Guide . . . A new engineering guide of the "Moduflow" control system for home heating and air conditioning, dealing with engineering phases of the various methods, including the new reset method. Issued by Minneapolis-Honeywell Regulator Co.

106—Brazing News . . . Issue No. 29 of "Low Temperature Brazing News" points out how the replacement of brazing alloys can simplify and speed up brazing operations. Issued by Handy & Harman.

107—Air Diffuser . . . A descriptive folder on its Kno-Draft Type K adjustable air diffuser and others. Issued by W. B. Connor Engineering Corp.

108—Blowers . . . Descriptive literature on blower assemblies for heating and air conditioning, listing capacities, sizes, and selector chart. Issued by Lau Blower.

109—Condensers . . . Catalogs (No. 23 and 24) describing its shell and tube and shell and coil condensers for Freon and methyl chloride. Issued by Acme Industries.

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1-45

*Happy Tales of
Trouble-Free Performance*

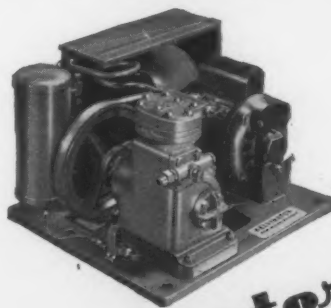


*What's going on here?
Even the chops are happy
over Joe's new Kelvinator Condensing Unit!*

Lena Rue

Wise service men always specify Kelvinator.
An unexcelled record of 30 years proves
Kelvinator Condensing Units give more
dependability, more economy, more
performance.

Kelvinator distributors and zone offices stock
a complete line of refrigeration supplies.
See them for your installation material
such as tubing, controls, dryers, etc.



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CONDENSING UNITS
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FOR YOUR HOME—REMEMBER KELVINATOR RE-
FRIGERATORS, ELECTRIC RANGES, WATER HEATERS
AND HOME FREEZERS

The MARKET Place

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THE REFRIGERATION INDUSTRY
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POSITIONS AVAILABLE

A large Eastern commercial body manufacturer, selling refrigerated bodies nationally, requires the services of a manager for this particular department.

He must have a thorough knowledge of refrigeration and be able, with the assistance of present body engineers, to design capacities, etc.

This man will be given complete charge of the Refrigeration Department and will be paid a salary commensurate to the job and the man.

All expenses will be paid and, in addition, a bonus will be paid through a profit-sharing basis. Box A452, The Refrigeration Industry.

FOR SALE

We offer the following equipment, our property, located at Cargill Elevator, Port of Albany, N. Y.

4—Fairbanks Morse 60 HP, 6 cyl. 4 cycle Model 36, size 4 $\frac{1}{4}$ "x6, 1200 RPM Diesel Engines.

4—Brunswick Vertical 4 cyl. single acting, self-foiling eccentric drive compressors, bore 6" stroke 5 $\frac{1}{4}$ ", size C 354 ammonia compressors. Serial Nos. 19662, 19661, 19447 and 18794.

5—Horizontal multipass shell and tube condensers measuring 15" in diameter x216" long, furnished complete with removable heads, bolts, gaskets, intermediate stands and floor stands.

1—Fairbanks Morse 1 $\frac{1}{4}$ " Fig. 525 circulating water pump without motor.

4—Falk Gear Reducers Type 7 HC 50 HP. Will sell individual units, or lot total.

F. O. B. Foundation, Albany, N. Y.

PORTER ELECTRIC COMPANY

612 Third Ave., South

Minneapolis 2, Minn.

Geneva 8655

ELECTRIC POWER PLANT EQUIPMENT

EQUIPMENT WANTED

WANTED TO BUY: Used Ammonia Compressors. The Rushton Equipment Company, P. O. Box 1751, Birmingham 1, Alabama.



A free Want-Ad Service for returning fighting men

We are reserving this department for free POSITIONS WANTED ads of honorably discharged men and women of our armed forces. THE REFRIGERATION INDUSTRY reserves the right to edit copy. The ads will run for one issue only but may be reinscribed from time to time at veteran's request. VETERANS: Send your name, address, service unit and serial number and a description of the kind of job you're interested in (dealerships, sales, service) to Classified Advertising Department "b," THE REFRIGERATION INDUSTRY, 812 Huron Road, Cleveland 15, Ohio.

WORLD WAR II veteran, one year's experience prior to enlistment, wants job in commercial refrigeration servicing organization. Prefer Cleveland or vicinity. Box A455, The Refrigeration Industry.

DISCHARGED VETERAN of 68th Troop Carrier Squadron, A. A. F., now engaged in the commercial service business and employing two mechanics, would like to get a dealership for a condensing unit, or anything at all applicable to the refrigeration business. Have the necessary space to expand. Box A453, Refrigeration Industry.

VETERAN recently discharged from Army Service Forces, with refrigeration experience while in service, would like job in sales and service department of active dealership. West Virginia or nearby area preferred, but open to other offers. Box A454, The Refrigeration Industry.

INSTALLATION AND SERVICING—Discharged veteran of the Signal Corps wants to break into refrigeration installation and servicing field. Prefer Cleveland or vicinity. Box A451, The Refrigeration Industry.



VICTORY LINE

• The Aerovox Victory Line is the answer to those wartime conditions and restrictions. A drastic reduction in number of types has been achieved without impairing satisfactory servicing. You can keep those electric refrigerators for the duration, with these Victory replacements...

VICTORY LINE

Victory Line of 22 capacitance values in electrolytic type, for 110-volt operation; 8 values for 220-volt operation. These 28 universal types have been critically selected so that a minimum stock provides for maximum service needs. Indeed, these 28 types can take care of upwards of 90% of all motor-starting capacitor replacements.

Handy Aerovox Conversion Chart indicates the Victory equivalent for any previously available type.

• Ask your jobber for Aerovox Victory Capacitors. Ask to see the Conversion Chart. Order your capacitors from him. Or write us direct.

AEROVOX
Capacitors
 INDIVIDUALLY TESTED
 AEROVOX CORP., NEW BEDFORD, MASS., U. S. A.
 In Canada: AEROVOX CANADA LTD., HAMILTON, ONT.
 Export: 13 E. 40 ST., NEW YORK 16, N. Y. Cable: "ARLAB"

LOCKER PLANTS . . .

Continued from page 32

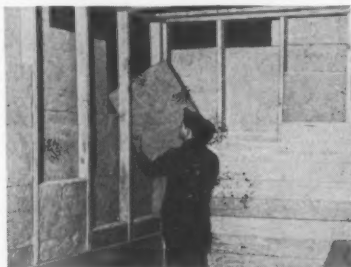
place in which to decide what and how much food to take home, several types of locker systems that can be used in normal-temperature rooms already have been developed. Among



Wood Conversion Co.

Here loose type locker plant insulation has been packed preparatory to laying floor.

these are the below-floor set-up, the "automatic" or self-service scheme (See REFRIGERATION INDUSTRY, June '44, p. 18), and the completely self-contained unit of 40 to 200 lockers which looks much like a glorified and more heavily-insulated walk-in.



National Gypsum Co.

Rock wool batts, also a popular locker insulation, being installed in wall framing.

Self-contained equipment might make every apartment house basement a potential place for installation—and that in turn would call for complete processing service furnished by some urban central plant. Some in the trade even predict that the self-contained unit will make obsolete the present substantial investment in buildings, since at the expiration of a lease the operator need only back up a truck to his building and move to another location. Such naturally would not be the case in the smaller communities where the locker plant is a business venture of substance and local pride.

Depend on it, for the refrigeration man who wants to get out and de-

velop some business, there's money in the locker plant industry.

Editor's Note: Next month's frozen food article, third in this series, looks into the home and farm freezer business. Meanwhile, we're ready and willing to answer whatever questions you may have about the locker plant business. Don't hesitate to write for additional information.

U. S. RUBBER BUYS GILMER

United States Rubber Co. has agreed to purchase the assets and business of the L. H. Gilmer Co. of Philadelphia, manufacturer of industrial V-belts, reports Herbert E. Smith, president of the rubber company.

Mr. Smith said that the purchase was made to round out further the mechanical goods division of U. S. Rubber Co. No change in management or operations of the Gilmer company is contemplated.



PREHISTORIC MAN EARLY FOUND THAT COLD SLOWS UP DECAY-- AND LIKE THE MODERN ESKIMO BURIED SURPLUS MEAT UNDER DEEP SNOW IN WINTER.

MODERN MAN REQUIRES YEAR-ROUND DEPENDABILITY-- AND THAT MEANS ALWAYS-RELIABLE REFRIGERANTS LIKE **ANSUL LIQUID SULFUR DIOXIDE** AND **ANSUL LIQUID METHYL CHLORIDE** IMMEDIATELY AVAILABLE.

Our technical book, "Ansul Refrigerants" (3rd Edition) available upon request

Ansul Chemical Company, MARINETTE, WIS.

"Now in our 30th year"

AGENTS FOR KINETIC'S "FREON -11," "FREON -12" AND "FREON -22"

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FREON 11-FREON 12
FREON 22**



Over the COUNTER

JACK THOMAS has been a customer of ours for a good many years; one of our better ones, too. He's always bought parts and materials in good size quantities, always was right on top of his account, besides—most of the time he was discountin' his bills with us.

Lately, though, I noticed he'd been slippin' up a little in his payments, and so the other day I dropped in over at his place to talk it over, figurin' I might be able to sort of put my finger on the situation.

Jack's one of those fellows who's always busy. He was, even before the war took one of his two men and made it so he and his other man have to work right around the clock to try to keep up with their calls.

Naturally, I didn't want to bust right out with what I'd come over about, but after passin' the time of day and listenin' to Jack answer a half dozen or so phone calls I finally got around to the subject.

It develops that Jack's situation is about the same as the average service operator—I guess you'd call it a combination of overwork and a sort of "let 'er slide" attitude resultin' from good times in general. When he had two men full time, Jack always did his own bookkeeping; always had his accounts right up to the minute, too. Went out after slow accounts on his books, and kept his own accounts current, besides.

Now, with more work to do than ever, and only one helper, he was pitchin' in full time on the servicing and lettin' the bookkeeping fall behind. He figured he couldn't afford to hire a full time bookkeeper, and wasn't sure he could get one if he did want to.

So he was just goin' along, doing the best he could, always figurin' he'd find time before long to catch up on his work.

"Lately, though, I've not been so sure," he told me. "Things are gettin' worse instead of better. I was looking the books over just the other day. The ones that were the prompt payers before things got so tight are still comin' through regularly; it's the ones I used to keep up to date by gettin' out to see

them that are falling behind."

Jack's business is pretty much commercial—lots of groceries and meat markets. So I went at it from that angle.

"Look," I says, "most of these stores do a big credit business, too—and I'll bet their collections have been okay, since most of their customers have war jobs and are earning good money. You probably figure that because they are gettin' theirs, without much pressin', you ought to be gettin' yours, too. But it don't always work out that way, and here's why:

"Merchandise ain't too plentiful nowadays—and money still talks. These customers of yours can use that cash to build up their inventories; lots of 'em are carrying more stock now



than they ever did before. You'd see that, if you ever took time to drop in at their places.

"That's where some of your money's goin', more than likely—and you ain't the only one that's holdin' the sack. So is everybody else that don't think enough of his charge customers to keep them up to date."

"You're mighty right," Jack says, "but those guys have seen the last of the buyin' they're goin' to do with my cash. One way or another, I'm goin' to see that all my back accounts are caught up, and that they stay that way from now on."

"That's a smart idea, Jack," I told him, "because the picture's liable to change pretty quick once the war in Europe's over with—which may not be too long.

"After all, no business is good business 'til it's paid for—and slow payments or loss of accounts are bound to come along to some extent, anyway. Don't just ask for it by lettin' 'em slide now."

THE REFRIGERATION INDUSTRY

THEY DIDN'T WAIT . . .

Continued from page 13

Among its customers are numbered such firms as S. H. Kress Co., Silvers 5-and-10 cent stores, Dixie Greyhound, Buckeye Cotton Oil Co. in Memphis and vicinity, including offices and laboratories, and McFadden Cotton Co., to name only those which come to mind most readily. In addition commercial servicing work is handled for Marine Hospital, Veterans Hospital, and Kennedy General Hospital.

The company sells and services Ebco water coolers, Charles Stephens reports, and only recently sold five units for installation in the Dixie Greyhound headquarters here. Dairies have been prominent on the commercial installations list, several jobs having been sold recently to locations to which electric service has lately been extended.

The manpower shortage has hit the Stephens organization, too. Right now, the two brothers, with the assistance of another man, are working long hours to try and keep up with the most essential calls.

They've set up a priority system on this part of their operation, too. The most essential calls come first, and later, if there's time, less important requirements are handled. "We figure it's up to us to keep the most important jobs going," Charles Stephens says. "We know we don't have time to do them all. And we don't 'kid' our customers. If we can't get around that day, we tell them that—if it'll be a week before we can do the job, we tell them that, too. Then it's up to them to decide whether they want to wait, or call in somebody else.

"The way we look at it, if we're honest with our customers we have a lot better chance of holding them for postwar business. If you take the time to explain your situation to the customer, sometimes he'll wait a few days without complaining, if the job's not too important. Even if he does decide to have somebody else do this particular job, he's not going to forget that you were honest with him, and he'll come back to you next time he needs service.

"We've tried to build our business solidly, ever since we started out; we're figuring on the future, and not on the amount of business we might be able to do right now—if we have

to do it half-way in order to get through it. Too many companies, in every kind of field, are in business for now and not for tomorrow. We don't want to get the reputation of being that kind of outfit—it don't fit in with our plans for after the war.

"Sure, we've been bothered plenty by shortages—especially Freon shortages in our air conditioning servicing—and we've had more than one chance to pick up material in the black market for a price. But that's not the way we play the game. We haven't done it yet, and what's more

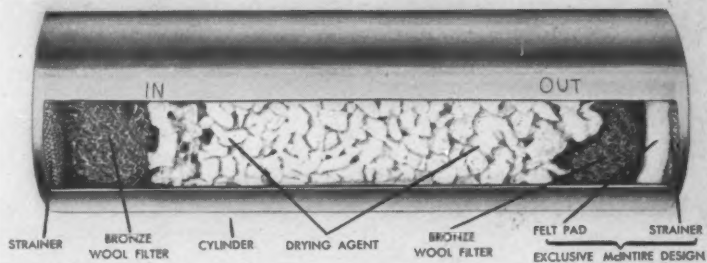
we're not going to do it."

Started as they already are in the selling field, the Stephens Brothers plan to go at it even more aggressively after the war, in both commercial and air conditioning. And they'll do it through the servicing approach. Charles Stephens says you can't beat it as a source of ahead-of-the-pack leads. There'll be more men in the organization then, and some of them will be concentrating pretty much on servicing—but the selling will be done by men who take their turn at servicing, too.

WHY A REPLACEABLE CARTRIDGE IS THE BEST PROTECTION

Where systems require periodic inspection and removal of drier charge, a demountable shell and cartridge assembly is easier to refill—easier to keep clean. Danger of loose packing is eliminated. Special cartridges to meet aggravated acid or sediment conditions can be installed in the same shell. In sweat tube installations a side outlet shell with cartridge refills can be serviced by the removal of a single cap.

Why a DFN is the Best Replaceable Cartridge



A SINGLE DFN cartridge does THREE jobs. It **DEHYDRATES**. It **STRAINS** and **FILTERS**. It **NEUTRALIZES**. The refrigerant is dehydrated and neutralized by a standard drying agent. An exclusive DFN strainer and filter assembly covers the COMPLETE area of the outlet with multiple layers of wire mesh, bronze wool and felt. It holds more sediment without pressure drop. It filters to minute size.

Semi-flexible DFN cartridges are easily installed and removed. DFN shells are easier to handle, last longer. They are simply constructed, with smoothly adaptable demountable flanges. DFN assemblies are manufactured in single and double flange models . . . in sizes for 1 H.P. to 30 tons, with a large safety factor. Get **THREE-WAY PROTECTION** with the DFN Cartridge. Sold by distributors everywhere.

MCINTIRE CONNECTOR COMPANY NEWARK 5, N. J.

Only the

**DFN
SYSTEM**

**DEHYDRATES
FILTERS
NEUTRALIZES**

DEHYDRATORS • STRAINERS

FILTERS • NEUTRALIZERS

JOBBER MEET

and face the roving camera during their recent meeting at the Edgewater Beach. Here are:

1. *M. J. Trautman*, Refrigeration Supply, Washington; *Mrs. Trautman*; *Miss Mary Silvers*, NRSJA headquarters; *Howard Hubbell*, Brass & Copper Sales, St. Louis.

2. *H. W. Small*, Thermal Co., St. Paul; *J. M. Oberc*, J. M. Oberc, Inc., Detroit; *George Roche*, Parks & Hull, Baltimore; *H. G. Stern*, Refrigerative Supply, Seattle.

3. *Austin Jones*, Kerotest; *Hal McPherson*, Henry Valve.

4. *Frank Millham*, War Production Board; *Sterling Smith*, Mills Industries.

5. New officers: *Ted Glou*, Central Service Supply, Syracuse, vice president; *Harold McCombs*, McCombs Refrigeration Supply, Denver, president.

6. *Frank Purtell*, M & E Refrigeration Accessories, Philadelphia; *Mrs. Robert Gennett*, Refrigeration Supplies Distributor, Birmingham; *Mrs. Sterling Smith*; *Frank Millham*.

7. *Warren Parker*, Hasco, Greensboro; *I. W. Lampton*, Enochs Sales, New Orleans.

8. *H. G. Stern*, Seattle; *E. A. Vallee*, Automatic Products.

9. *Ben Blazer*, M. Blazer & Son, Passaic; *Irving Fajans*, Aetna Supply, New York City.

10. *Frank Langsenkamp*, F. H. Langsenkamp Co., Indianapolis; *Mrs. Langsenkamp*; *Mrs. Warren Parker*.

11. *J. M. Oberc*, Detroit; *George Allen*, Kerotest.

12. *J. A. Strachan*, Weatherhead; *Joe Mideke*, Mideke Supply, Oklahoma City; *L. M. Snell*, Snell Refrigeration Supply, Dallas.

(Photos by *Irving Alter*, the *Harry Alter Co.*; *Austin Jones*, *Kerotest*, and *REFRIGERATION INDUSTRY Staff.*)



McCombs Heads Jobber Group

HAROLD R. McCOMBS, of McCombs Refrigeration Supply Co., Denver, was elected president of the National Refrigeration Supply Jobbers Association at the organization's meeting in the Edgewater Beach Hotel, Chicago, Nov. 20-22.

Theodore I. Glou, of Central Service Supply Co., Syracuse, N. Y., was elected vice president, and Otto A. Friemel, of Brass & Copper Sales Co., St. Louis, was named secretary-treasurer.

New directors elected include Mr. McCombs (re-elected), Mr. Glou, Mr. Friemel, Irving Fajans, Aetna Supply Co., New York City; E. C. Marsden, Warsden & Wasserman, Hartford, Conn.; and Alex H. Holcombe, Jr., Victor Sales & Supply Co., Philadelphia.

Other directors are L. C. Batho, Manning Equipment, Ltd., Halifax, N. S.; R. M. Graves, Graves Refrigeration, Atlanta; J. M. Oberc, J. M. Oberc, Inc., Detroit; George J. Roche, Parks & Hull Appliance Corp., Baltimore; H. W. Small, Thermal Co., Inc., St. Paul, and Harold G. Stern, Refrigerative Supply, Seattle.

Ten New Members

Addition of 10 new companies to N.R.S.J.A. ranks also was announced at the meeting. New members are:

Associated Refrigeration & Equipment Co., Inc., Sacramento, Calif.; Coleman Electrical Supply Co., Brooklyn; Excel Refrigeration Supplies, Inc., Brooklyn; Foster Supply Co., Buffalo; Graves Brothers Co., Tampa, Fla.; Percy G. Hansen, Akron, Ohio; F. C. Lovelock Pty. Ltd., Sydney, Australia; Mason Supply Co., Columbus, Ohio; Refrigeration Parts Co. (not Inc.), Milwaukee; and Snell Refrigeration Supply Co., Dallas.

The following companies, formerly term members, have now become regular members of the association: Authorized Refrigeration Parts Co., St. Louis; Central Supply Co., Indianapolis; and K & M Supply Co., Tulsa, Okla.

In an informal discussion of WPB problems with Frank Millham, assistant director of the General Industrial Equipment Division, and G. W. Weston, acting chief of the electrical

and mechanical repair section of OCR, jobbers learned that:

Present policy of denying all WPB-541 and WPB-547 applications for refrigeration equipment (except parts) will be continued for the present. To replace inventory, ratings received from ultimate consumers should be extended.

No changes in P-126 are now contemplated, and it is possible that ratings may be extended beyond "V-E Day" to take care of essential civilian uses. Such ratings, if continued, would be below the "military band," however.

Service Men Polled

Reporting on the recent Rema meeting, A. B. Schellenberg, Rema president, said that plans are being made for a joint manufacturer-jobber conference next spring.

As a part of his report on the post-war plans of service engineers, H. T. McDermott, national secretary of R.S.E.S., gave the "score" of answers to a special question on what service men thought of the parts jobber handling unitary equipment:

"1. Should independent refrigeration supply jobbers handle for un-

franchised sales the major equipment lines, including but not limited to such items as freezer chests, window conditioners, domestic refrigerators, self-contained air conditioners, display cases, coolers, etc.?"

Answers: Yes, 320; No, 286; No answer, 10.

"2. Should the jobbers provide for service during the guarantee period to those consumers who were unable to secure such service from the dealers through whom the original purchase was made?"

"This refers to cases where a dealer may have discontinued business while the equipment remains in the consumer's hands under guarantee. A jobber may call another dealer to give the service but of course would have to pay for the necessary work. The jobber might send a service man from his own organization to protect the name of the product and the consumer."

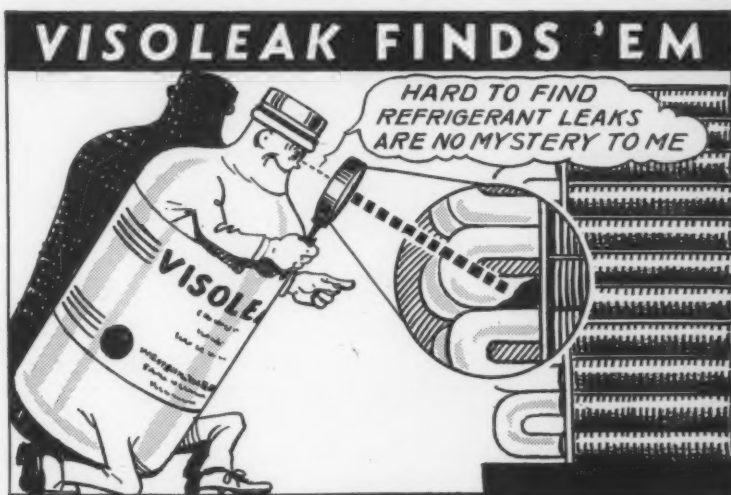
Answer:

(a) Yes, if work is done by another dealer, 170.

(b) Yes, if work is done by jobber or dealer, 219.

(c) No, in either event, 196.

(d) No answer, 31.



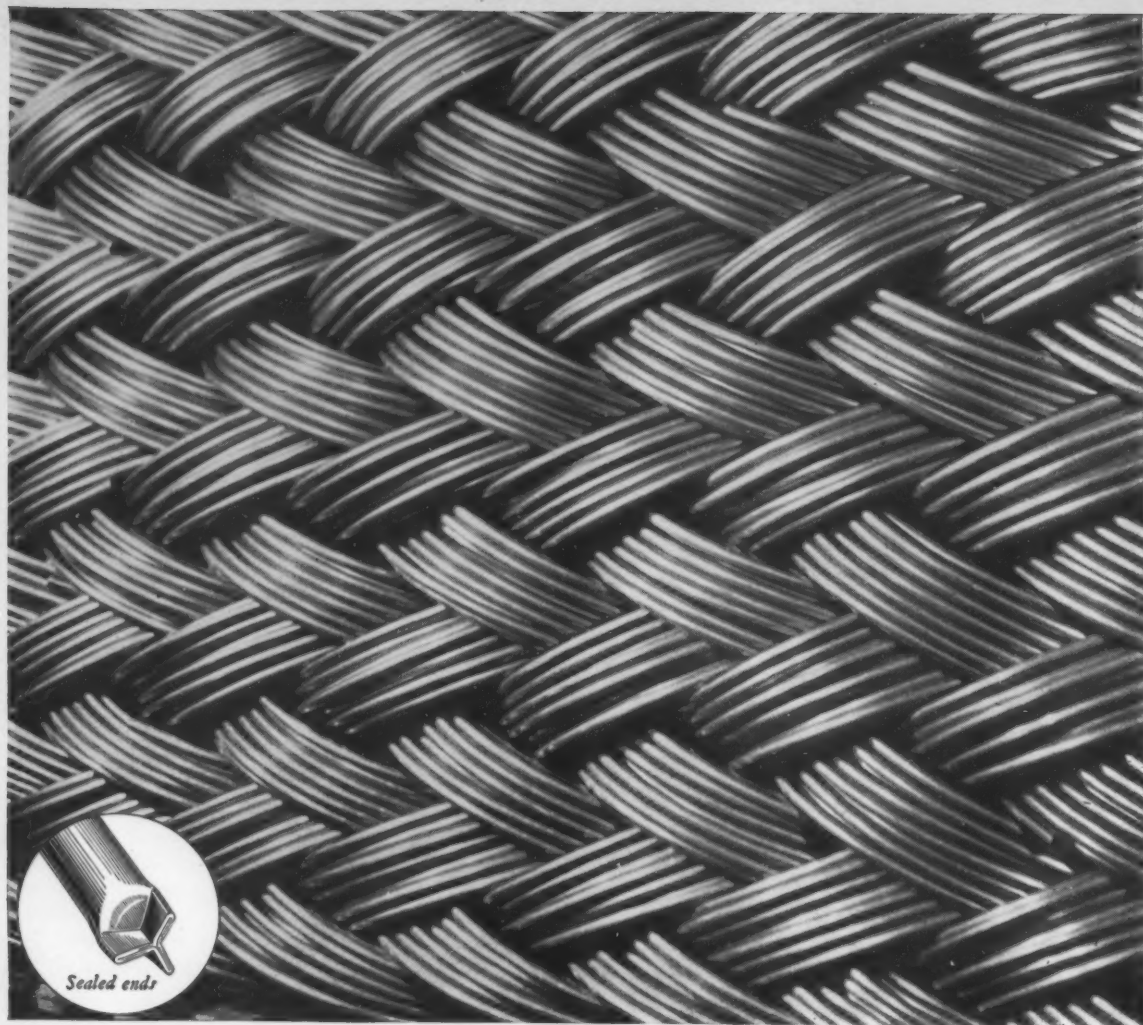
RED SPOT FURNISHES CLUE TO REFRIGERANT LEAK DETECTION

VISOLEAK is a finely-treated colored refrigerant oil which penetrates every nook and cranny of the system. The leak is indicated by a red stain—similar to the discoloration on a carburetor in which ethyl gasoline has been used. Can be used safely and effectively with any type of refrigerant. See your jobber today. If he has not stocked Visoleak write for complete information.

WHOLESALE PRICES		CASE LOTS	
4 ounce bottle	\$ 1.00	48 bottles	
8 ounce bottle	1.75	24 bottles	
1 pint bottle	3.00	24 bottles	
1 quart bottle	5.00	12 bottles	
1 gallon can	14.00	6 cans	
SAVE 10% ON CASE LOTS			

WESTERN THERMAL EQUIPMENT CO.

5141 ANGELES VISTA BLVD.
LOS ANGELES 43, CALIF.



REVERE Dryseal Copper Tube for refrigeration

This tube is now readily available through distributors in all parts of the country for repair and service work.

Revere Dryseal Copper Tube is dead soft, and so it is exceptionally easy-working. Flares, bends, coils with ease. Its soft temper and fine, close, even grain structure are produced by precise, automatically-controlled electrical heat-treating, during which no air touches the tube, inside or out. The metal is oxygen-free to begin with, and the "kid glove" care we give it in every step of manufacture keeps it that way, bright, dry, oxide-free. After final dehydration each end is sealed tight to keep out dirt, air, moisture—and the sealed ends are no larger than the diameter of the tube, permitting easy installation in restricted spaces. Avail-

able in coils of approximately 50 feet, and in sizes from $\frac{1}{8}$ " to $\frac{3}{4}$ " o.d., wall .035".

Also important in refrigeration and air conditioning—Revere Sealed End Copper Tube, each length plugged and taped to keep tube chemically clean and protect the ends against distortion. Available in hard or soft tempers, in three types, for pressures up to 400 lbs., and in diameters from $\frac{1}{4}$ " to 12 inches. Write Revere Executive Offices for full information.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices: 230 Park Ave., New York 17, N. Y.

THE REFRIGERATION INDUSTRY

new. Oh yes? Repeat performance. Water froze? And how!

What to do? The druggist has us reassure him again that we know what we are doing. His calmness is restored, and we have at it again.

We now dig up a service manual on this particular model of instantaneous cooler. Here we find that the gaskets have something to do with the operation of the float, or that the evaporator may be oil-logged. With due process, float is again removed, and the tank is determined to be free of oil. Installed again with different gasket thickness and tried again. Result: another freeze-up.



We decide to have one more fling at it. Pump down again and remove float. Examine the assembly and the little ring rest in the float tube minutely. As I said before, it looks slightly worn. Could it be possible the needle lever was slipping into the ring, instead of being retained by it? That would let the float leak and cause frosting at the regulating valve. As simple as that. The only catch is that replacing that ring is a factory operation.

The gremlins have declared a major victory. All this and nothing accomplished. I was determined that if there was a way I was going to find it. I had an idea. I went to my tool kit and came up with a small stainless steel washer. It didn't fit the float tube. A little work with a file solved that. Breathing a little prayer, we slipped the washer down the tube. It rested snugly on the ring. We quickly installed the float before the gremlins could return.

The little stainless steel washer is still there and the cooler is still working, the gremlins being unable to touch it to this day. And the druggist hums as he mixes his fountain specialties . . . and even calls us his friends.

Have you had some gremlin-haunted experience you'd like to tell us about? If so, send it in—we'll help you share it with others. The Editors.

THE PRACTICAL Refrigeration Engineering MANUAL . . . by Harold Smith

LOOKING AHEAD

(In this foreword to his discussion of engineering applications, the author outlines his views of future trends.)

THE post war period will undoubtedly usher in a period of refrigeration activity, greater than has been experienced at any time in the history of the industry.

Abnormal backlogs of replacement installations, new products and new uses will all produce heretofore unequalled opportunities for the refrigeration industry. Individuals and companies already established in the industry will be confronted with the problem of meeting a demand for refrigeration installations far in excess of the supply, for several years after products are released for full production.

MANY NEWCOMERS

This condition usually attracts many newcomers into an industry and can be looked upon to do so again. Men well grounded and established in the refrigeration business will hold an advantage over the newcomer which can in most instances be maintained by the simple process of doing good work, using good engineering practices and being fair in their dealings with the public.

The need for good engineering practices is particularly necessary and essential in refrigeration work, since a large majority of new refrigeration installations are sold because of the satisfactory results obtained by someone known to a prospective purchaser who has recommended the installer to his friend or acquaintance. Proper engineering and good installations produce satisfactory jobs, the stepping stones to more sales.

HERE ARE STEPS

A logical sequence of steps is necessary to produce satisfactory installations:

1. A thorough knowledge and understanding of the requirements and conditions involving the application.

2. An accurate appraisal of the refrigeration load requirements with additional safety surplus capacity to take care of any abnormal requirements.

3. A selection of the type of equipment best suited to give the best results.

4. The selection of the equipment with sufficient capacity to handle the load with intermittent operating cycles, at the maximum and most efficient operating pressures, minimum operating cost and proper humidity conditions.

5. Making a good installation. Workmen who are conscientious always produce good work, free from leaks and making a good appearance.

6. Careful and thorough purging of the system, testing for leaks, proper refrigerant charge, proper switch adjustments, checking the oil level, carefully instructing the user regarding the equipment and the things he should know and do, plus check-back in 24 to 36 hours to make any readjustments necessary after the operating temperatures have been reached.

QUALITY IS REWARDED

If the steps as outlined are followed carefully and thoroughly, you can always be confident of good results and customers who will be glad to recommend your work to their friends. This all adds up to more business, more income, and a lot of personal pride and satisfaction, in the knowledge of a job well done.

Previous chapters of the Manual have dealt with the methods of appraising the refrigeration loads and the selection and capacity of the proper equipment to be used to secure satisfactory results.

Beginning in our next chapter, we will take, one by one, the various popular applications and analyze the requirements for each application and the equip-

A NEW FIELD . . .

Continued from page 12

all blueprints are attached to the instructions, together with the manufacturer's operating instructions applying to the condensing unit.

To alert refrigeration installation firms, expanding use of frozen foods in the restaurant field means an ever widening field of active prospects for low temperature storage equipment. Progressive restaurant operators in many localities have long been rela-

tively large-scale users of frozen food products. However, up to now many of them have relied on off-the-premises storage facilities.

With increased use of frozen foods, such storage has definite disadvantages, particularly to the restaurant which must provide around-the-clock service to patrons. Qualified refrigeration installing firms should have little difficulty in making larger restaurants see the advantages, both in economy and service, of having their supply of frozen foods available for use at all times.

ment best suited to produce the desired results.

The survey form reproduced in the December chapter provides a basis for securing the necessary information to enable the refrigeration man to intelligently work out an engineering problem and propose the equipment best suited and of proper capacity to do a good refrigeration job.

Another practice that should always be given careful consideration by the refrigeration engineer is the practical use of various accessory items in the planning of the refrigeration system. This covers proper distribution of refrigerant circuits, proper pipe sizes for maximum efficiency, particularly where long runs of tubing are required and high operating pressures are desirable.

ACCESSORY EQUIPMENT

The practical use of hand control valves with multiple systems; the use of liquid indicators, check valves, heat exchangers, oil separators, solenoid valves, two temperature valves, thermostatic controls, high pressure cutouts, low pressure controls, pressure and compound gauges—all these, and more, are problems on which the refrigeration man must be prepared to advise. The successful operation of many installations requires use of many of the above mentioned accessories. Care should be used, however, to eliminate the use of any accessory item in applications where it is not

needed, from the standpoint of simplicity, insofar as practical. Future chapters of the Engineering Manual will outline in detail and cover the refrigeration requirements for:

SCHEDULE OF TOPICS

- Fresh meat processing.
- Frozen meat, fruit and vegetable processing.
- Locker storage plants.
- Milk processing.
- Ice cream processing.
- Apple storage.
- Fur storage.
- Candy and chocolate processing.
- Water cooling for processing in bakeries and bottling plants.
- Water cooling for drinking purposes.
- Storage and dispensing of beverages.
- Storage and dispensing of ice cream.
- Refrigerated trucks for frozen foods, ice cream and meats.
- Refrigeration requirements in groceries and meat markets.
- Refrigeration requirements in delicatessens.
- Refrigeration requirements in restaurants and hotels.
- Refrigeration requirements in hospitals and institutions.
- Refrigeration requirements in night clubs and cafes.
- Farm and home processing and storage of frozen foods.
- Industrial cooling of coolants.
- Room cooling.
- Air conditioning.

EDITOR'S NOTE: Because of the increasing number of requests being received for copies of *The Practical Refrigeration Engineering Manual* in book form, we feel it is necessary to offer the following word of explanation:

The *Manual* is not now available in book form, because of current paper limitations. For the present, it is appearing exclusively in the monthly editions of THE REFRIGERATION INDUSTRY. At a later date it is planned to issue the complete text in bound form; but right now we can only urge you to save your copy of THE REFRIGERATION INDUSTRY every month, and compile your own "book" as the series progresses. Meanwhile, if you'd like to reserve a copy of the *Manual* when it is published in book form, send us a card and we'll gladly add your name to the waiting list.

AMINCO OIL SEPARATORS



Aminco Oil Separators protect compressors by maintaining correct oil level in crankcase and by excluding oil from refrigerant stream they enable coils, condensers, valves and dehydrators to function most efficiently.

These oil separators are made for jobs from 1/2 H.P. to 120 tons and are used everywhere, ashore or afloat, where efficient refrigeration is desired.

Full descriptive bulletins on request.

AMERICAN INJECTOR CO.

1481 1/2 14th AVE. DETROIT 16, MICH.
Van D Clothier, 1015 E. 16th, Los Angeles
George I. Boone, Rm. 730, 1775 Broadway, New York
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Check
DOOR GASKETS
on
Every Job

JARROW PRODUCTS
420 N. LA SALLE ST., CHICAGO 10, ILLINOIS

THE REFRIGERATION INDUSTRY

distributors. The priority ratings previously granted for inventory purposes, together with the ratings received by dealers and distributors from ultimate consumers, have resulted in a large backlog of unfilled rated orders for several types of scarce equipment.

As a result, the critical components are not available in sufficient quantity to fill presently outstanding rated orders for complete assemblies within a reasonable length of time.

During this temporary period, it will be necessary for dealers and distributors to extend ratings received from ultimate consumers to replace equipment sold from their inventories.

In the meantime, WPB is studying the problem and L-38 may be amended so that dealers and distributors can obtain a limited quantity of equipment for inventory.

AFTER V-E DAY

CONSIDERATION is being given by WPB to the establishment of a "civilian preference rating" band to be used after V-E Day to assure manufacture of most essential civilian items. Refrigeration and air conditioning equipment, considered essential for many purposes, would be included in this plan, if it is adopted.

Straight war orders, as now, would continue to carry highest ratings. The new scale, if put into effect, would make materials for civilian production of refrigeration equipment available on a preferential basis over certain

other civilian goods which did not carry such ratings.

Announcement of post V-E Day plans is expected to be made soon, to give manufacturers a chance to plan their operations under the system.

VETERANS RETURN

UNDER the recent veterans reemployment plan put into effect by Frigidaire, veterans are given 60 days instead of the 40 specified by the government to apply for reemployment. At present, about 312 World War II veterans have returned to their pre-war jobs in the Dayton plants of the company.

The reemployment section of the Selective Service Act provides that the honorably discharged veteran is entitled to his old job back if the job still exists; if he wants it back; if it was not a "temporary" job; if he is able to perform the job's duties; and if he applies for the job within 40 days after leaving the armed services.

Frigidaire's plan, in addition to allowing the veteran 60 days for reemployment, provides that all jobs be analyzed by department supervisors to determine minimum physical requirements, and that all applicants, military and civilian, be given thorough medical exams by company physicians to determine their physical ability.

R-1 RELAXED

MOST recent change in Rubber Conservation Order R-1 has removed the neoprene types of synthetic rubber from allocation control and allows its use without limitation as to amount in any permitted product.

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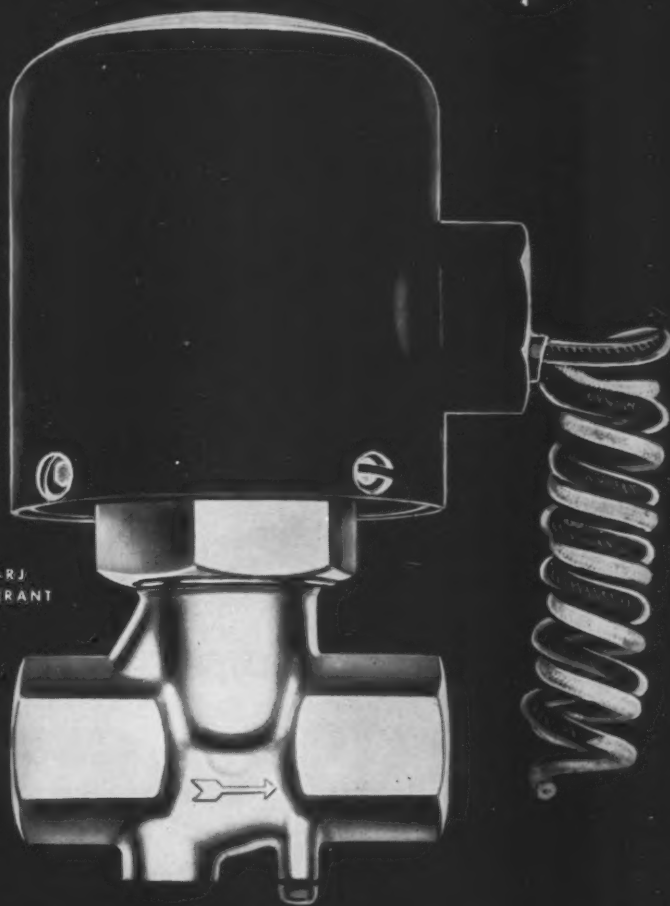
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